Star Wars Sound Machine

Inventory:

2 Metal slinky springs

2 Large foam cups

2 Small foam cups

Directions:

1) Place the slinky on the floor so the coils are all together facing up. Place the large foam cup inside of the slinky coils and press in gently.

2) Lift the cup straight up. The end coils should come up around the center of the cup.

3) Place your hand around a few coils in the cup's middle to hold the slinky in place.

4) Bounce your hand up and down to create longitudinal waves and observe the sound vibrations echoing from the cup.

5) Repeat your hand motions at different heights—low and high—to hear the different sound vibrations and see the longitudinal waves produced. Make observations about changes and differences as you vary the motion of the cup.

6) Remove the large cup and repeat the investigation with the small cup. Make observations about similarities and differences.

Short Science Story (S^3)

The Styrofoam cup acts like sounding board when stuck into the Slinky. The Slinky vibrates when it shakes and hits the floor. The cup is forced to vibrate at this same frequency and because of its large surface area, it amplifies the sound the Slinky was making all along.

Star Wars Sound Machine - What the heck?

A Slinky can model sound waves traveling through solids, liquids or gases. Each coil represents a molecule of the material. With a push, the coils compress against each other. The compression travels to the other end of the Slinky as a wave. Sound travels through solids, liquids and gases as a compression wave. Energy is transmitted through the coils and travels from source to receiver.

When an object begins to vibrate, the molecules next to it are compressed or pushed together. This compresses molecules further out. When the object moves back, a space in the air is created next to the object. The first molecules of air expand to fill this space, causing molecules further out to expand too. This compression and expansion of the air molecules is called a sound wave.

The Styrofoam cups in this activity act as sounding boards to amplify the vibrations from the Slinky.

Source: http://www.smm.org/sound/nocss/activity/2b.htm