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DIY ACTIVITY

MAKE YOUR OWN WAVE MODEL

GRADES 3-5

OBJECTIVES

- Build a model that demonstrates wave motion.
- Experiment with energy and wave motion.

MATERIALS NEEDED

- BBQ skewers—approximately 30
- Gummy candy—more than 60
- Duct tape—more than 10 feet
- Glass of water
- Ruler
- Structures to anchor the duct tape (like a table and a bookshelf)

Activity Duration: 30 minutes or more

PROCEDURE

AS A GROUP, WATCH THE GENERATION GENIUS WAVE PROPERTIES VIDEO TO FURTHER EXPAND THIS UNDERSTANDING AND INTRODUCE LONGITUDINAL WAVES.

1. Carefully place one gummy candy on each end of each skewer. Dip each end of the skewer into the water before adding the gummy candy to make the candy easier to puncture. **The skewers are very sharp - use caution.**
2. When skewers are prepared, stretch a length of duct tape approximately 5 feet long (sticky side up) across a clean, flat surface. Use a little extra duct tape to anchor the ends of the duct tape so it stays flat and taut while you work on the next steps.
3. Find the balance point near the center of the skewer by balancing it on one of your fingers. Hold the skewer at that point and place it perpendicularly across the duct tape, making sure to place the balance point in the center of the duct tape strip. Press the skewer to the duct tape
4. Use a ruler to place each additionanl skewer 2 inches apart along the duct tape strip.
5. When all skewers have been placed, carefully put another piece of duct tape sticky side to sticky side along the length of the wave model.
6. Anchor one end of the model to one surface and the other to another so that the wave model is suspended between.
7. Experiment with waves by tapping one skewer.

WHAT IS GOING ON HERE?

Because all the skewers are linked together and mobile, when energy is added to the system by tapping one skewer, it is transferred along the length of the model through a wave. The skewers and the gummy candies make it easy to see the wave. If enough energy is added to the system, when it reaches the anchor point, it is reflected and travels back along the wave model in the other direction. By watching the gummy candy you can see the amplitude and wavelength. Adding more energy to the system (tapping harder) will cause wavelength to decrease and amplitude to increase.

FURTHER EXPLORATION

Explore how waves change as more or less energy is added to the system (harder or softer tap). How can amplitude be increased? Decreased? How can wavelength be increased? Decreased? Try making several wave models and connecting them (or make a longer wave model) and experiment by adding energy to the system.