RAFT IDEAS

Topics: Sound, Waves, History of Technology

Materials List

- ✓ Record **(Note: record will be permanently damaged during this activity!)**
- ✓ T-pins
- ✓ Mylar or paper
- ✓ Masking tape
- ✓ Pencil
- ✓ Optional: Record Player

This activity can be used to teach:

- Sound waves (CA Science Standards: Grade 2, 1.g; HS Physics, 4.d)
- Sound waves as energy (CA Science Standards: Grade 3, 1.d; Grade 6, 3.a)

raft resource area for teaching
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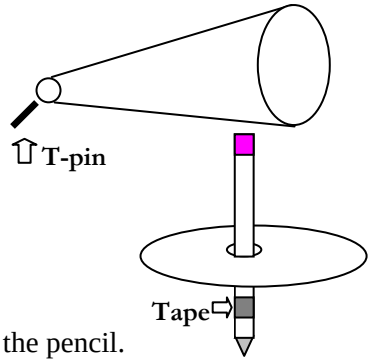
Back in the Groove

The Simplest Possible Phonograph – Ever!

This is a great activity for investigating sound. It might just be a history lesson about records for your students; and you can tell them, "No, this will not work with CDs."

Assembly

1. Make a cone out of paper or Mylar.
2. Tape a T-pin to the small end of the cone.
3. Wrap a piece of masking tape around a sharpened pencil.
4. Place the record on the pencil and slide it down until it is snug against the tape. (See Illustrations)



To Do and Notice

1. Have one student carefully spin the record by turning the pencil.
2. Gently set the needle onto the turning record. Keep the needle as steady as possible.
3. Listen to the sound produced. Can you recognize the song or hear the words?

Optional: In lieu of the taped pencil apparatus, simply place a record on a phonograph that is turning at the correct speed. Use the cone and T-pin combination to play the record instead of the phonograph needle. Using a phonograph will usually produce more recognizable sounds.

The Science Behind the Activity

In the groove of the record are small bumps that cause the pin to vibrate with a certain frequency, which creates sound. Because of the shape of the cone, the sound resonates and is amplified. Edison first invented the phonograph as a personal recording device, but consumers showed more interest in using the phonograph as a player for pre-recorded music.

Taking it Further

Have your students redesign the phonograph to produce a louder and clearer sound: Use different materials to make the cone; try making the cones larger or smaller; try changing the angle of the needle or the type of needle. Vary the direction of spin.

Web Resources (Visit www.raft.net/more for how-to videos and more ideas!)
For information about the history of the phonograph, visit:
http://memory.loc.gov/ammem/edhtml/edcyldr.html
http://history.sandiego.edu/GEN/recording/ar303.html

Instructions by RAFT Education Department