



3 min

## How we speak

We have vocal cords. When we breath in, the vocal cords open to let air into our lungs. When we want to speak, we breath out and our vocal cords close. The air that is trying to go past the cords makes the cords vibrate, which makes sound.

## Wave Machine

[Wave Machine Demonstration \(youtube.com\)](https://www.youtube.com/watch?v=...)**WAVE Machine****Materials you will need:**

Duct Tape                      Ruler                      Metre Stick  
Wooden Skewers                      Sharpie Marker  
Ju-Jubes Candy (gummy bears/gum drops type candy) 2 per wooden skewer

**Exploration:**

1. Lay a piece of duct tape down (however long you want to make your wave machine ~ approximately 2-3 metres , sticky side up.
2. Draw a line all the way down the middle of the duct tape using a permanent marker with the metre stick.
3. Mark the line on the duct tape at every 5 cm.
4. Measure and mark the middle of each wooden skewer with the marker.
5. Align the middles of each skewer to the middle, spaced out marks on the duct tape and stick the skewers onto the duct tape.
6. Stick a ju-jube (or whatever gummy candy you are using) on each end of the skewers as evenly as possible to keep an even weight between the sides.
7. Pick up the 2 ends of the duct tape and hold them stretched tightly to check for an even weight distribution (ju-jubes should be level and balanced along the line). Adjust any ju-jubes that need to be adjusted.
8. Secure the skewers by placing a second strip of duct tape over the first piece to stick the two layers together.
9. Using a bit more duct tape, secure each end of the wave machine to equal height tables (or chairs, between two secure posts/support stands etc)
10. Lift a ju-jube at one end of the machine and release it. Observe the wave pulse.
11. Stop the wave before beginning a new wave.
12. Experiment with lifting the ju-jube higher, try a quick pulse versus a slow pulse. Can you make a larger wave? Can you make a wave that has more waves in a second? What happens to the wave when it gets to the other end?

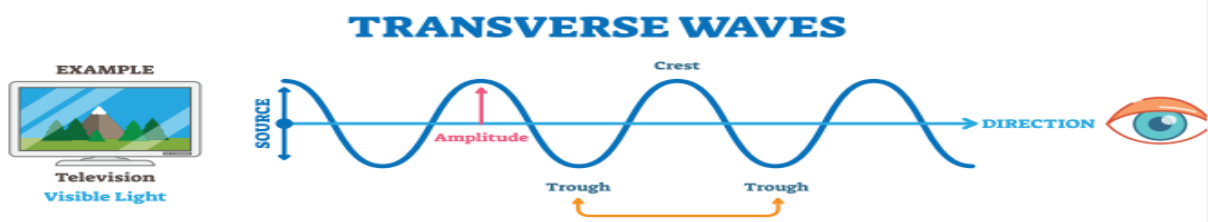
## Types of Waves

There are 2 types of waves :

1) Transverse

2) Longitudinal

Transverse waves are waves where the vibrations of the particles are PERPENDICULAR (right angles) to the direction the wave travels. They are like the waves of the ocean, moving up and down with crest and troughs. Light travels through these types of waves.



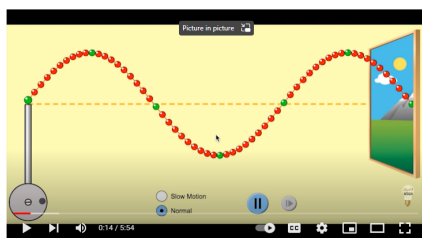
Longitudinal waves are waves where the vibrations of the particles are PARALLEL to the direction the wave travels. Sound travels through these types of waves with compression and expansions of the particles.



[Transverse wave using slinky coil - YouTube](#)



# Light travels

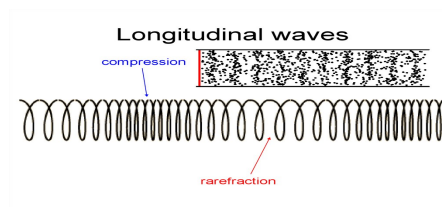


Transverse waves explained  
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[Longitudinal wave using slinky coil - YouTube](#)




# Sound Travels



Sound waves are compression waves. They are also called longitudinal waves because the air vibrates along the same direction as the wave travels.

Sound waves will lose energy as they travel which is why if you are too far away from something, you cannot hear it since the sound waves have lost energy and are no longer bumping the particles around them.

<https://youtu.be/nGKffdal4Pg>  [Production of sound | Mechanical waves and sound | Physics | Khan Academy - YouTube](#)

Sound waves can bend, this is called **diffraction**. (Why you can hear noises around corners)

