

Sound and Light Waves

**Dear Parents/Guardian and student,
This home activity will help you and your child build their knowledge about sound and light waves. You will be learning to explore and experiment like engineers! All materials for this activity will be provided.**

Vocabulary Words:

Sound Waves
Light Waves
Translucent
Transparent
Opaque
Illumination
Engineer
Vibrations



Book Recommendations:



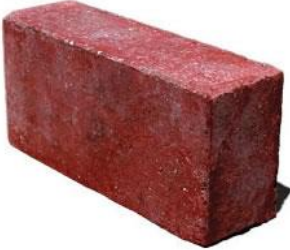
“Light: Shadows,
Mirrors, and Reflections”
by Natalie Rosinsky
“Sounds All Around”
by Wendy Pfeffer

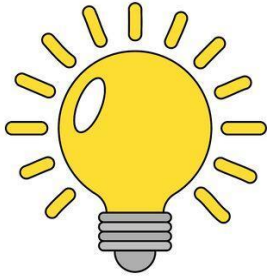


Big Learning Goals:

Vibrating materials make sound.
Sound waves can make materials vibrate.
Sound waves and light waves can be used to communicate.

Vocabulary Terms:

| | | |
|--------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Sound Waves | Are vibrating forms of energy that are made of molecules and look like waves. |  |
| Light Waves | A form of energy which our sense of sight can detect. |  |

| | | |
|--------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Translucent | An object that is cloudy and only allows part of the light to pass through. |  |
| Transparent | An object that is clear and light can pass through. |  |
| Opaque | An object that light cannot pass through. |  |

| | | |
|---------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Illumination | Make bright with light. |  |
| Engineer | A person who designs and builds products, machines, systems, or structures. |  |
| Vibrations | The action of moving or causing to move back and forth or from side to side very quickly. |  |

Today you get to be an engineer. An engineer is someone who identifies a problem that needs to be solved. An engineer has to come up with many ideas. The engineer picks the best idea and draws a design. Next, the engineer gets to build the diagram with real materials and then has to test it out! It is very fun to be an engineer!

The Problem:

Let us imagine the power has gone out and you need to send a message to a person in another room in your house. You have been asked to stay in a room in your house. Your job is to design a device that will help you communicate with a person in your house in another room.

The Engineering Design Process

- **Identify the problem**
- **Research**
- **Brainstorm ideas**
- **Choose the best idea**
- **Draw a design**
- **Build a model**
- **Test your model**
- **Evaluate and improve design**
- **Share!**

Here are your Research Questions that you may ask yourself as you are building your phone:

1. **How do I get something across the room to help us communicate?**
2. **What if the door is shut?**
3. **What will I talk through?**
4. **What are my materials?**
5. **How far away is the room from the room I'm in?**
6. **How much material do I need?**

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