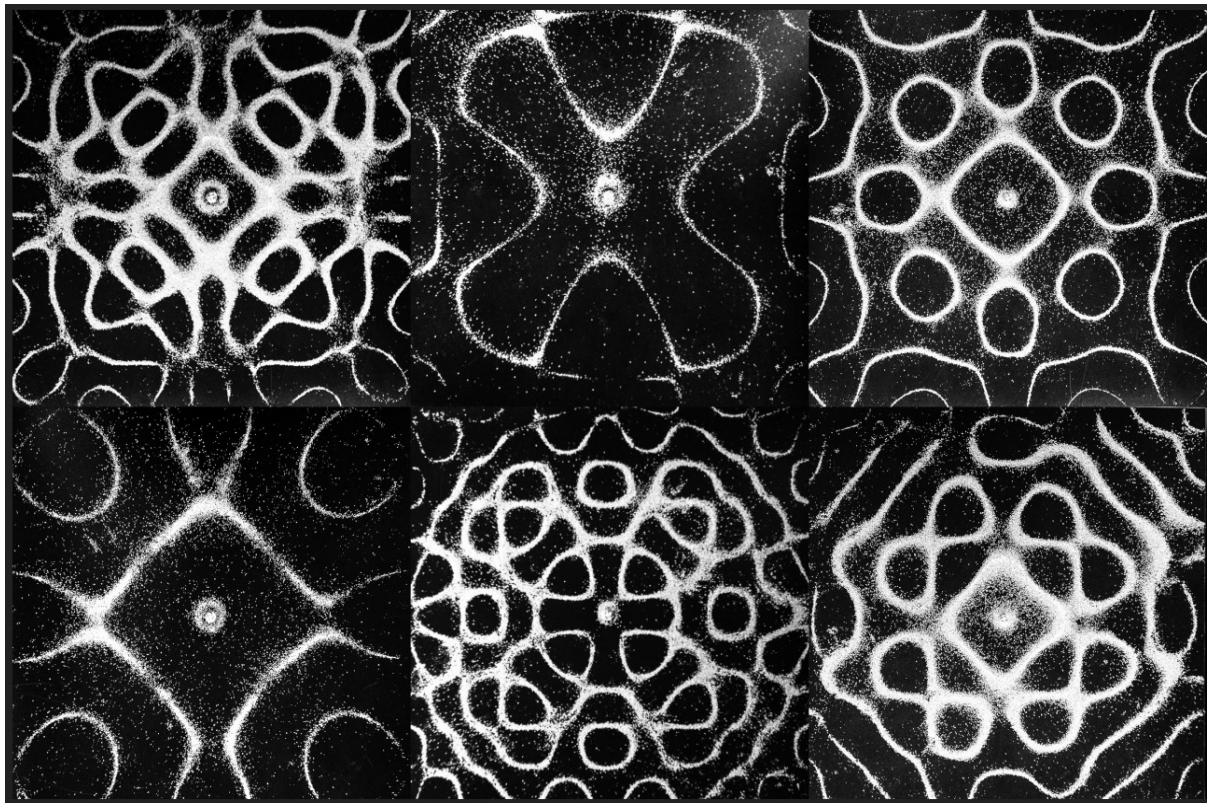




**SEE IT. FEEL IT. UNDERSTAND IT.**

**BASSpak + Chladni Plate STEM Curriculum Guide**

Silent Sound System



## **Program Overview**

This multidisciplinary STEM lesson helps students experience sound through sight, touch, and inquiry. Students observe Chladni figures forming on a vibrating plate while simultaneously feeling those same frequencies through BASSpak vibroacoustic technology.

## **Learning Objectives**

- Understand that sound is vibration
- Observe standing waves and resonance
- Identify nodes and antinodes
- Compare frequencies through touch and observation
- Connect physics concepts to music, engineering, and accessibility

## **Recommended Grades**

Grades 4–12, adaptable for college STEM demonstrations.

## Materials & Setup

- Chladni Plate
- Fine sand or salt
- Tone generator app
- Amplifier or vibration driver
- BASSpak vibroacoustic unit
- Headphones (optional)
- Observation worksheet



Students begin by exploring sound frequencies through BASSpak before observing visible standing-wave patterns on the Chladni plate.

## Lesson Plan (30–45 Minutes)

**Hook:** Ask students: “Can you see sound? Can you feel sound?”

**Frequency Exploration:** Demonstrate 40 Hz, 80 Hz, 120 Hz, and 250 Hz through BASSpak.

**Chladni Demonstration:** Sprinkle sand on the plate and slowly change frequencies to create patterns.

**Compare & Contrast:** Students compare what they see with what they feel.

**Discussion:** Explore resonance, standing waves, and real-world applications.

### Teacher Talking Point

The Chladni plate lets us see sound. BASSpak lets us feel sound. Together they transform an invisible force into a hands-on STEM experience.

# Student Observation Worksheet

Frequency: \_\_\_\_\_

What did you feel? \_\_\_\_\_

What did you observe? \_\_\_\_\_

Did the pattern become more complex? \_\_\_\_\_

How would you describe the vibration? \_\_\_\_\_



# Real-World Applications

**Music:** Instrument makers study vibration patterns.

**Engineering:** Bridges, buildings, aircraft, and speakers must account for resonance.

**Accessibility:** Vibroacoustic technologies help people experience sound through touch.

**STEM Education:** Multi-sensory learning improves engagement and retention.

## About Silent Sound System

Silent Sound System develops innovative audio and vibroacoustic technologies for education, wellness, events, and experiential learning environments.