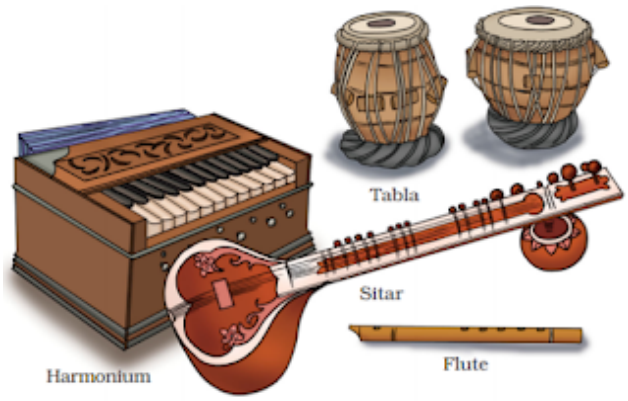
# 🔊 10.1 Sound is Produced by a Vibrating Body

- **Sound is made when things vibrate (move back and forth).**
- **Without vibration, no sound is produced.**



Some musical instruments

# 🌟 Activity 10.1 — Metal Plate Hanging

## 🔧 What to Do:

- **Hang a metal plate or thali using a thread.**
- **Strike it with a stick.**

## 🔍 What You Observe:

- **It produces sound.**
- **When touched lightly, you feel vibrations.**

**✅ Conclusion: Vibrations produce sound.**

# 🌟 Activity 10.2 — Rubber Band Plucking

### 🔧 What to Do:

- Stretch a rubber band between fingers.
- Pluck it with one finger.

### 🔍 What You Observe:

- The rubber band vibrates and produces a twang sound.

✅ Conclusion: Sound is produced by vibrating objects.

## 🌟 Activity 10.3 – Metal Dish with Water

### 🔧 What to Do:

- Take a metal plate and pour water into it.
- Strike the plate gently.

### 🔍 What You Observe:

- The plate produces sound.
- Ripples appear in water.


✅ Conclusion: Vibration of the plate transfers to water, proving sound comes from vibration.

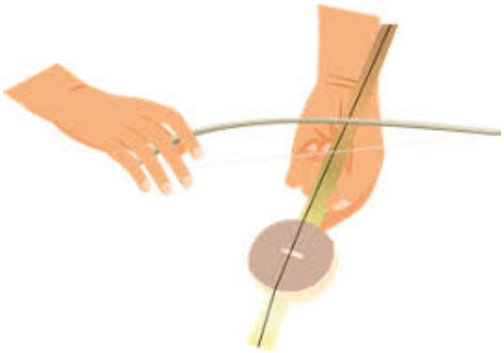
# 🌟 Activity 10.4 — Ektara: Sound from Vibration of String

### 🔧 What to Do:

- Take an empty coconut shell or a wooden bowl.
- Stretch a rubber string tightly over it.
- Pluck the stretched string with your finger (just like an ektara).

### 🔍 What You Observe:

- The string vibrates and you hear a twang-like sound.



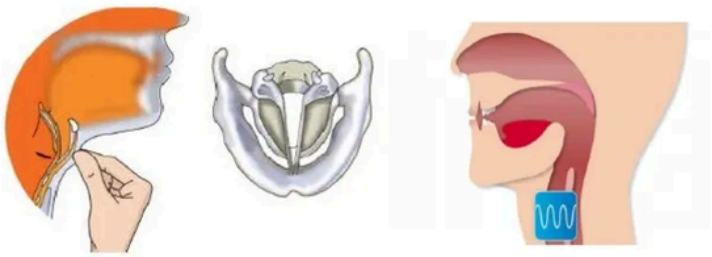
### 🌟 Conclusion:

- Vibrating string produces sound.
- Musical instruments like ektara, guitar, and violin work on this principle.

✅ Sound is produced when a tight string vibrates.

## 🧍 10.2 Sound Produced by Humans

- Sound in humans is produced by voice box (larynx).
- Vocal cords vibrate when air passes through.



# 🌟 Activity 10.5 — Jaltrang (Bowls with Water)

### 🔧 What to Do:

- Take metal bowls with different water levels.
- Tap gently with a spoon.

### 🔍 What You Observe:

- Each bowl produces a different sound (pitch changes).

✅ Conclusion: Sound changes with amount of water due to vibration change.

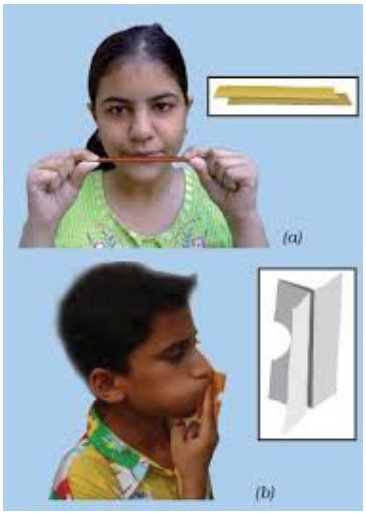
# 🌟 Activity 10.6 — Rubber Strip/Paper Experiment

### 🔧 What to Do:

- Stretch a rubber strip or paper between lips or fingers.
- Blow air through it.

### 🔍 What You Observe:

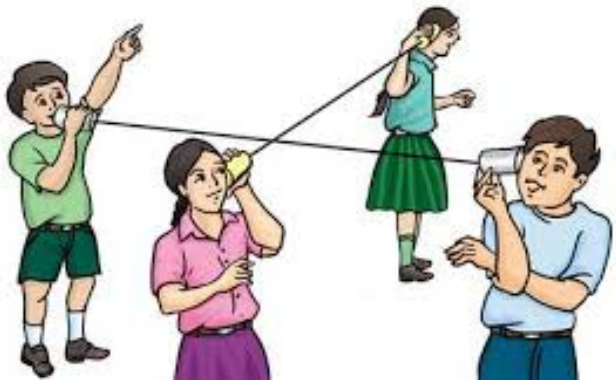
- A buzzing sound is produced.




✅ **Conclusion: Vibrating strip produces sound — just like vocal cords.**

## 🌫️ 10.3 Sound Needs a Medium to Travel

- **Sound cannot travel in vacuum.**
- **It needs a medium (solid, liquid or gas).**



*A toy Telephone*

# 🌟 Activity 10.7 — Phone in Airtight Jar

### 🔧 What to Do:

- **Place a ringing phone in a sealed jar or container.**
- **Gradually remove air (if possible using a vacuum pump).**

### 🔍 What You Observe:

- **Sound becomes fainter or may stop completely.**


✅ **Conclusion: Sound needs air (a medium) to travel.**

# 🌟 Activity 10.8 — Bell in Water

## 🔧 What to Do:

- **Ring a bell under water (in a bucket/tub).**

## 🔍 What You Observe:

**You can hear the bell even through water.**

✅ **Conclusion: Sound can travel through liquids also.**

# 🌟 Activity 10.9 — Sound Through Solids

## 🔧 What to Do:

- **Touch one end of a metal scale or stick to your ear.**
- **Tap the other end lightly.**

## 🔍 What You Observe:

- You can hear sound through the stick clearly.

✅ Conclusion: Sound also travels through solids.

## 👂 10.4 We Hear Sound Through Our Ears

- Eardrum vibrates when sound reaches it.
- Vibrations go to inner ear, then brain.

## 🌟 Activity 10.10 — Rubber Sheet with Grains

### 🔧 What to Do:

- Tie a rubber sheet tightly over a container.
- Put small grains (like pulses) on it.
- Make sound near the sheet (like clapping or speaking loudly).

### 🔍 What You Observe:

- Grains jump slightly.

*Fig. 10.15 : Understanding action of an eardrum*

✅ Conclusion: Vibrations caused by sound can move objects.

## 📉 10.5 Amplitude, Time Period & Frequency

- **Amplitude: Size of vibration → Loudness**
- **Time Period: Time for one vibration**
- **Frequency: Vibrations per second → Pitch**

## 🌟 Activity 10.11 — Spoon and Tumbler

### 🔧 What to Do:

- **Hit a metal tumbler gently and then hard with a spoon.**


### 🔍 What You Observe:

- **Soft hit → soft sound**
- **Hard hit → loud sound**

✅ **Conclusion: More amplitude = louder sound**

## 👂 10.6 Audible and Inaudible Sounds

- **Human audible range: 20 Hz to 20,000 Hz**
- **Below 20 Hz or above 20,000 Hz → inaudible**
- **Dogs hear high-frequency sounds**

Frequency Determines the Pitch of a Sound

## 🎵 10.7 Noise vs Music

| Music | Noise |
| --- | --- |
| Pleasant sound | Unpleasant sound |
| Harmonious | Harsh, disturbing |

✅ **Music can become noise if too loud.**

## 📢 10.8 Noise Pollution

- **Excess unwanted sound = Noise Pollution**
- **Sources: Vehicles, factories, loudspeakers, kitchen appliances**
- **Harms: Lack of sleep, stress, hearing loss**

### ✅ How to Reduce Noise Pollution:

- **Use silencers in vehicles**
- **Avoid loud music/TV**
- **Plant trees**
- **Keep noisy machines away from homes**