

# FROM SOUND TO MOTION

## **Purpose of the Activity:**

To enable students to compare sound technologies used in the past and today, and to observe through a self-made setup that sound is transmitted by vibrations.

## **Learning Area / Theme:**

Lighting and Light and Sound Technologies



**CURIOUS  
BOX** 

# FROM SOUND TO MOTION

Let's Spark Curiosity



The following questions are asked to the students:

- Is there anyone among you who plays a musical instrument?
- Can you give examples of sound instruments you see around you?

The questions, "Let's think about the sounds that come from musical instruments and from birds. They sound beautiful, don't they? Now let's think about car horns in traffic or people talking very loudly, they can be tiring, can't they? Every sound has a source, and depending on its volume and type, it can affect the mood of people, animals, and even plants. For example, we feel happy and peaceful in places where we hear birds chirping or the sound of flowing water. When we say kind words or sing songs to plants, they can feel it too. So, how does sound travel?" are asked, and the topic is discussed. Students are asked to take out and examine the activity materials.

Let's Start Exploring!

The activity video is watched by pausing necessary. The contents of the set are checked before starting the activity. All lids and packages are opened together with the students.

Watch the video  
by pausing it!



## Set Content

- |                                  |   |
|----------------------------------|---|
| <input type="checkbox"/> Spool   | <input type="checkbox"/> Salt                   |
| <input type="checkbox"/> Balloon | <input type="checkbox"/> "From Sound to Motion" |
| <input type="checkbox"/> Label   | activity sheet                                  |

## How Do We Do It?

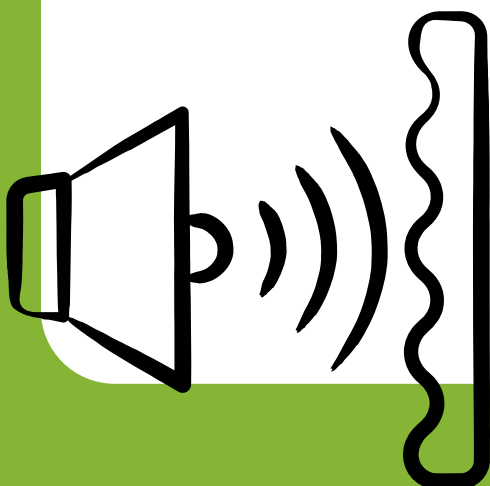
1. Stick the label onto the outer surface of the spool.
2. Place the spool on a flat surface and stretch the balloon over one end to cover it.
3. Sprinkle a small amount of salt onto the balloon.
4. Speak loudly or play some music and observe the movement of the salt grains.

## What Are The Things That Future Scientists Should Discover?

**The following questions are asked to the students:**

- Do sound technologies make our lives easier?
- What are the negative effects of sound technologies?

Sound is produced when an object vibrates, and these vibrations spread through the environment and reach our ears. When we speak, our vocal cords vibrate; when we hit a drum, the drum skin vibrates; or when we close a door, the door vibrates, these vibrations make the air vibrate and create sound waves. Sound can travel through a medium such as air, water, and solid materials; however, it cannot travel in empty space because there is no material to carry the vibrations. In daily life, feeling the vibration when you place your hand in front of a speaker or hearing the noise of a door closing hard are examples that show sound is produced by vibrations and travels through them.



## What Are The Things That Future Scientists Should Discover?

**The following questions are asked to the students:**

- Do sound technologies make our lives easier?
- What are the negative effects of sound technologies?

People have done many studies to share their own voices or the sounds of other things with more people. Thomas Edison recorded sounds using a device called the phonograph. Later, the gramophone was invented. The gramophone is a device that both records sound and allows it to be heard. As sound technologies developed, devices such as the cassette player and tape, radio, record player, microphone, speaker, megaphone, television, music systems, CD, DVD, computer, and mobile phones were invented.

In the early days, scientists recording sounds on records was not meaningful by itself. To make the sound heard, they changed its level and volume using sound devices. They used speakers, megaphones, and microphones to make the sound heard from farther distances, and these devices are still used today. Although all of them aim to increase the volume of sound, they are used in different places.

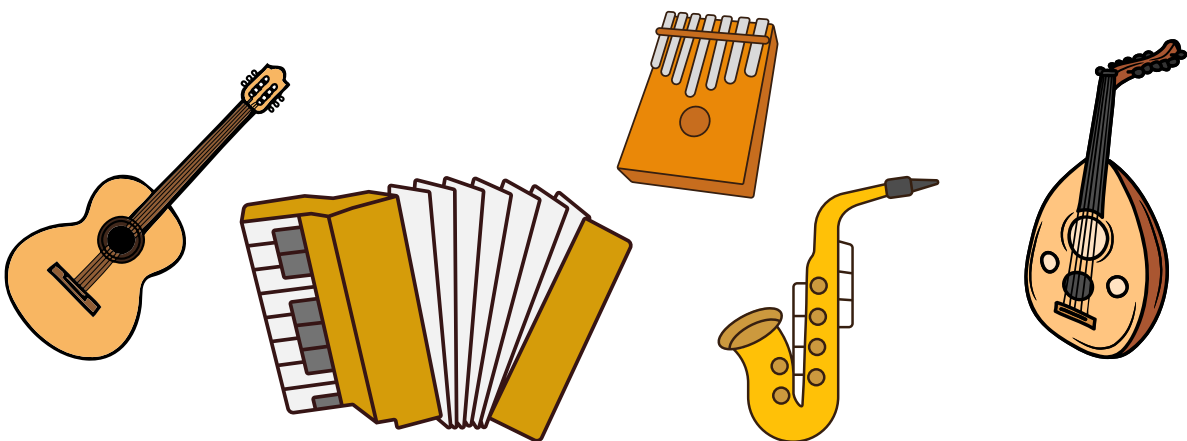




Megaphones are used for police announcements, during the call to prayer at mosques, and in ambulances. Microphones are used at concerts, in schools, at ceremonies, and at meetings.

Thanks to headphones, sound does not spread outside and the volume increases. People with hearing loss need to hear sounds at a higher volume. Hearing aids help them hear and understand sounds more clearly.

Besides sound technologies, music can be made with any object that produces sound. Tools used to make music are called instruments. There are different types of musical instruments based on how they are played: percussion, string, bowed string, wind, and keyboard instruments. String instruments produce sound through vibrating strings. They work by plucking the strings with a pick and letting them vibrate. Fingers are used during this process. Examples of string instruments include the guitar, electric guitar, bass guitar, bağlama, oud, mandolin, and qanun.



### **What are the positive/negative effects of sound technologies?**

All sounds that disturb our ears, harm us, and distract our attention are called noise pollution. Noise pollution can cause hearing loss. It can distract our attention and focus. It may lead to extreme tiredness, weakness, headaches, forgetfulness, and stress. It also disturbs animals and may cause them to leave their environment.

On the positive side of sound technologies, devices such as speakers and microphones can increase the volume of sound and carry it to distant places. The sirens of ambulances, fire trucks, and police vehicles warn other vehicles and people and allow quick access. Thanks to alarm systems, theft can be prevented.

## Scientific Explanation for The Inquisitive



The following question is asked to the students:

- How does sound come from the strings of a guitar?

When the strings of a guitar are touched, the string vibrates and produces sound. The six strings on a guitar have different thicknesses and are not under the same tension. That is why each one produces a different sound. The vibration of the string is not very strong. When it moves forward, it compresses the air next to it and increases the air pressure. Some of this air then pushes the next layer of air outward. When the air inside the guitar begins to vibrate, the sound becomes louder. Sound travels through the air as sound waves. In the end, these sound waves cause very small vibrations in the eardrum. These vibrations are what we hear as sound.



## What Have We Discovered?

The sentence, “We discovered that sound travels in vibrations and needs a medium, such as air, to spread.” The letter from the scientist Graham Bell is read. The activity sheet is completed. The question, “Is there anything you are curious about related to sound?” is asked to the students.



## What Else Can We Do?

Dear Teacher,

Together with the scientists of the future, you observed that sound travels in vibrations. You can explore the topic further by conducting the “How is Sound Produced?” experiment.

## How is Sound Produced?



### Materials;

- Cup, a small amount of salt, speaker or mobile phone

1. The cup is turned upside down.
2. A small amount of salt is poured on top.
3. The sound coming from the speaker or phone is first held at a distance from the salt.
4. Then, the sound source is moved closer to the salt.
5. The dance of the salt is observed.

Question of  
The Day



“Can glass break with the power of sound?”

# CURIOUS BOX



miniskop