

Chapter 6

Sound

LESSON PLAN

SPECIFIC OBJECTIVES

Students will learn about

- ❖ brief introduction of sound
- ❖ sources of sound
- ❖ musical instruments
- ❖ sound produced by human beings
- ❖ propagation of sound
- ❖ sound as a longitudinal wave
- ❖ some terms related to a wave
- ❖ characteristics of sound
- ❖ speed of sound
- ❖ speed of sound in different media
- ❖ audible and inaudible sounds
- ❖ reflection of sound
- ❖ absorption of sound
- ❖ soundproof box

Teaching Aids

Pictures/charts/models/animation of sound-producing sources and musical instruments; some useful formula related to terms of a wave in order to solve a numerical problem; few pictures related to reflection of sound.

Teaching Strategy

- ❖ The teacher should teach the students about brief history of sound.
- ❖ Students should be asked to study sources of sound, i.e., a tuning fork; musical instruments, their common kinds, i.e., string, percussion, wind and reed instruments, and their examples and illustrations. They should also be asked to study activity 1 showing that a vibrating fork produces sound given at page 94

- ❖ Students should be asked to perform activity 2 related to string instruments and activity 3 related to percussion instruments given at page 95.
- ❖ The teacher should ask the students to learn question-answer and something more related to musical instrument given at page 96. He/She should also ask the students to study sound produced by human beings and related activities 4 and 5 given at page 97.
- ❖ The teacher should ask the students to learn question-answer related to vocal cords; propagation of sound in which sound cannot travel through vacuum with the help of experiment. He/She should also ask the students to learn question-answer given at page 98. He/She should also ask the students to perform activity 6 showing that sound travels through air in all directions given at page 98, and sound travels through gases, liquids or solids using activities 7, 8 and 9 respectively given at page 99.
- ❖ Students should be encouraged to study something more, and to solve check point 1 given at page 100. They should also be asked to study sound as a longitudinal wave; activity 10 showing to demonstrate wave motion and activity 11 showing the formation of a wave in a string given at page 100.
- ❖ Students should be asked to study sound wave as longitudinal wave, and to perform activity 12 showing to demonstrate formation of a longitudinal wave given at page 101; graphical representation of a longitudinal wave.
- ❖ The teacher should ask the students to learn some terms related to a wave with definition and its related numerical examples.
- ❖ Students should be asked to study characteristics of sound, i.e., loudness and pitch. They should also be asked to perform activity 13 showing that loudness of sound increases with increase in amplitude of vibrations given at page 103. He/She should also ask the study to learn soft and loud sound graphically.
- ❖ Students should be encouraged to study pitch and its related activity 14 in which pitch of a sound increases with increase in its frequency given at page 104. They should also be asked to study high-pitched and low-pitched sound graphically and question-answer given at page 104. They should be asked to solve check point 2 given at page 105.
- ❖ Students should be suggested to study speed of sound in different media and its estimation; something more given at page 105. They should also be asked to perform activity 15 showing that speed of sound is more in a solid than in air.
- ❖ Students should be suggested to study Table 6.1 showing speed of sound in certain media; related numericals. They should also be asked to study audible and inaudible sounds; something more related to supersonic wave; reflection of sound and its related activity 16 given at page 108. They should be asked to study echo and its related activity 17 given page 108; reverberation; absorption of sound and its related activity 18 and soundproof box.
- ❖ The teacher should encourage the students to solve check point 3 given at page 109.
- ❖ Students should be asked to recap the chapter using wrapping it up and know these terms. They should also be asked to answer the question given in test yourself and discuss the think zone given in it.

Boost UP

- ❖ The teacher should ask each student of the class one-by-one to tell one example each of sound-producing objects.
- ❖ Students should be asked to define the terms like tuning fork, stem and prongs that help to produce sound. They should also be asked to tell one example each of string, percussion, wind and reed instruments.
- ❖ Students should be questioned related to sound as longitudinal wave and its graphical representation. They should also be asked to tell the definition of vibration, amplitude, time period and wavelength and their SI unit; loudness and pitch. They should also be asked to tell the definition of characteristics of sound.
- ❖ Students should also be asked to tell the speed of sound in air and different media.
- ❖ The teacher should ask the students to tell the answer of questions related to audible and inaudible sounds and reflection of sound; reverberation; absorption of sound and soundproof box.

Expected Learning Outcomes

Students must be able to know the

- ❖ definition of sound.
- ❖ sources of sound.
- ❖ different kinds of musical instruments.
- ❖ sound produced by human beings.
- ❖ propagation of sound, i.e., way through which humans produce sound.
- ❖ media through which sound can travel.
- ❖ sound as a longitudinal wave.
- ❖ some terms related to a wave.
- ❖ characteristics of sound.
- ❖ speed of sound in air and in different media.
- ❖ audible and inaudible sound in detail.
- ❖ reflection of sound.
- ❖ echo and reverberation.
- ❖ absorption of sound.
- ❖ soundproof box.

Evaluative Questions

The teacher should ask the following questions to evaluate the students.

1. Define sound.
2. Is a tabla percussion instrument?

3. Define string instrument with two examples.
4. In which medium sound cannot travel?
5. Which is the speed of sound in air?
6. An explosion takes place 1.5 km away from observer. If the time taken by the sound of explosion to reach the observer is 6 s, find the speed of sound.
7. What is meant by echo?
8. Name the sounds having frequencies higher than 20,000 Hz.