Longer investigation [1]

How do the noise levels vary in your environment?

Try measuring sound intensity:

- in different locations around school
- at different times of day
- in different weather conditions

How do the noise levels change as you move away from the sound?

Why might we use a datalogger or other measuring device rather than using the human ear to find out how loud sounds are, or how far they can travel?

Resources

Data loggers or Apps on a tablet/mobile phone to measure sound intensity (loudness), sound source, tape measures

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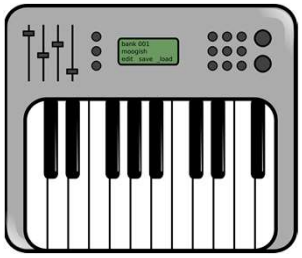
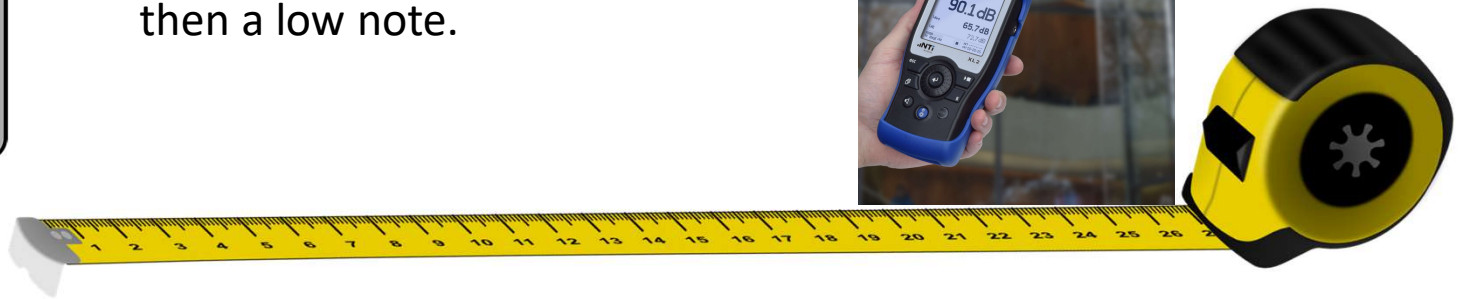
Longer investigation [2]

Which frequency sounds travel furthest?



Top Tip:
Try playing a high note, then a low note.



Resources
High & low frequency electronic sound source, e.g. an App on a computer or an electronic keyboard, data loggers or Apps on a tablet/mobile phone to measure sound intensity (loudness), tape measures.
Note: if you use your voice or musical instruments, the loudness of the sound could change as well as the pitch (frequency).

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What did you find out?

How did you change the pitch of your sound?
What do you think happens to a sound wave when the pitch changes?

What was the loudest area in your school?
What happened when you move away from this noisy place?

Which sounds travelled furthest?
If you want to attract someone's attention, what type of sound would you choose?

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Questions for further learning

Can you explain how sound travels to your ear?
Children could stand in a line or use dominoes to reinforce visually how a sound wave is transmitted through a medium (air, liquid or solid) by vibrating particles.

What can you hear in space?
Using the model described above, children should understand that they cannot hear anything in a vacuum.

How could your hearing change as you get older?

How do different animals communicate using sound?
Children could research animals that use high frequency sound (ultrasound) such as bats and dolphins, or low frequency sound such as elephants or those that do not hear at all.

How are our oceans changing?
Children could research the effects of climate change on marine life.

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Maths links

Area of learning	Activity
Measuring	Distances: cm – using plastic ruler/straws to create sounds; m – to measure distance from sound source. Older children could measure sound intensity (dB) and sound frequency (Hz).
Graphs	Older children could plot line graphs to show how the sound intensity changes as they move away from the source.
Averages	Older children could take mean/median averages of sound data.

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Writing links

Area of learning	Activity
Narrative	Read The Whale & the Snail by Julia Donaldson Read Waiting for the Whales by Sharyl McFarlane Read The Storm Whale by Benji Davies
Non-chronological report (newspaper)	Explain what scientists have found out.
Argument / persuasive writing	Should whale hunting be banned in every country? Should we limit where big ships can travel?
Instructions	Explain how to make the noise of your musical instrument higher pitched.

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Glossary

Sound intensity	relates to the loudness of the sound (measured in decibels) which depends on the energy or power of the sound wave and how far the sound wave travels from its source
Sound frequency	the number of vibrations per second (measured in Hertz) which determines the pitch (‘higher’ and ‘lower’ sounds associated with music)

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To help you find high quality resources to support your primary science teaching quickly and easily, we provide links to excellent resources for teachers, children and families on our Wow Science website :

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