**ACTIVITY: Musical sounds**

**Activity idea**

In this set of activities, students are introduced to basic Physical World concepts about vibration, sound and music through the use of play and exploration.

This activity provides opportunities for students to investigate:

* the parts of musical instruments that vibrate
* the actions musicians take to make the instruments vibrate to make sounds
* simple home-made musical instruments to observe vibrations and sound
* how combinations of sounds that we like create music.

# For teachers

## Background information

All musical instruments work by making vibrations. We make sounds by actions such as striking, blowing, plucking, swinging, shaking or scraping the instruments. Individual instruments have features that allow them to make different sounds. The suggested experiences in this resource are designed for curriculum levels 1 and 2. They are underpinned by the NZC Nature of Science ‘Investigating in science’ aim: Students will extend their experiences and personal explanations of the natural world through exploration, play, asking questions, and discussing simple models. This resource identifies key science concepts and ways in which students can explore, experience and build their understanding of sounds, movement, vibrations and music.

***Recognising students’ alternative conceptions***

Children naturally and instinctively develop their own ideas about how things work. These self-developed concepts make sense to the individual but may be scientifically inaccurate. It is helpful to know some of the alternative conceptions students may hold. Awareness helps educators to identify them when they surface in discussions and provides an opportunity to scaffold change. It takes time to change alternative conceptions. Research shows that students can hold multiple conceptions – their own explanation and a school explanation – at the same time.

***Engaging discussion and deepening understanding***

While students are exploring and playing with the instruments, use the opportunities to ask questions and engage in discussion to:

* check prior knowledge about how instruments make sounds
* check for (and challenge) alternative conceptions
* develop content vocabulary
* develop, consolidate or extend thinking
* encourage communication, comparison and analysis between individuals and groups
* look for opportunities for students to design simple investigations to answer questions.

***Building science knowledge requires multiple experiences over time***

Students will build their science understanding about sound from year to year. Concepts often build sequentially. The New Zealand Ministry of Education resource Building Science Concepts Book 18 [*Exploring Sound: Using Sound-makers and Musical Instruments*](https://scienceonline.tki.org.nz/Resources-and-teacher-support-material/Building-Science-Concepts/Titles-and-concept-overviews/Exploring-Sound) lists the concepts of music and sound in this likely sequence of understanding:

* Sounds that we like can be combined to make music
* We make sounds by actions such as striking, blowing, plucking and scraping.
* Musical instruments all make vibrations – they have features that allow them to make different sounds.

##

## Ideas for teaching key science concepts about sound

**Concepts:**

* **Musical instruments all make vibrations.**
* **They have features that allow them to make different sounds.**
* **The larger the vibration, the louder the sound.**

*What you need*

* Flexible, plastic rulers
* A variety of musical instruments for students to use (shakers, stringed instruments, drums)
* Materials to make simple instruments (combs, jar lids, rubber bands, tins, bottles)

*What to do*

1. Place a flexible plastic ruler on the edge of a table. Hold one end down on the table and push on the other end to create vibrations and sounds. Experiment with the amount of pressure applied to create small or large vibrations and soft or loud sounds. Experiment with the position of the ruler on the table (the length of the ruler that is able to vibrate) to explore pitch (lower or higher sounds).
2. Use the following questions to explore ideas and deepen understanding:
* What is happening to the ruler?
* What am I doing to make the sound?
* What is the scientific word we use to describe what happens to make sound? (Vibrating.)
* What happens when I … (push harder, move the ruler)?
* How does the sound travel to your ear?
* Do you think this is music?
* If we all use rulers to make different sounds, will it become music?
1. Provide students with a selection of musical instruments. In small groups, ask them to investigate how the instrument makes a sound. **Note**: Do not allow students to share instruments, like recorders, to avoid sharing saliva. If students blow across bottles to hear sounds, consider sanitising the bottles after each use.
2. Use the following questions to explore ideas and deepen understanding:
* How does the instrument make a sound?
* What part of the instrument makes the sound?
* What do you have to do to make the instrument work?
* What is the scientific word we use to describe what happens to make sound? (Vibrating.)
* How do you know that this is the vibrating part?
* What happens if you prevent the vibrating – for example, if you cover the strings or holes in an instrument?
* What are the other parts of the instrument for?
* How do you make the instrument make louder or softer/quieter sounds?
* Does this make a difference in the size of the vibrations you make?
* How does the sound travel from the instrument to your ear?
* Are the sounds we are making music or noise? What is the difference?

What to look for:

* Are the students able to apply their understanding to the links between vibration and sound to the musical instruments they investigate?
* Can they identify and simply describe the different pitch and volume of the sounds made by each instrument?
1. Provide craft/recycled materials to make simple instruments. For example:
* stringed instruments with rubber bands to pluck (empty tissue box, jar lids)
* percussion instruments (tins with balloons stretched over the top, small containers with beads inside for shakers, glass jars with differing amounts of water)
* blowing instruments (bottles filled with different amounts of water, a comb with a layer of lunch paper over the teeth).
1. Use the questions in step 4 to explore ideas and concepts with the students.