Wind Chimes

LESSON AT A GLANCE

All materials for this lesson can be found at the QR code

1 Data Collection

Ask students if they have wind chimes at home or if they have seen and listened to them.

- *What is the purpose of a wind chime?*

Listen to ideas and share the history of them.

Discuss: wind chimes are pretty to listen to, but they can also be more than that.

Ask: *What information can wind chimes give us about how windy it is outside?*

Tell students that they are going to test the following hypothesis:

By listening to wind chimes over time, we can estimate how fast the wind is blowing. The louder the chimes ring at their loudest point (maximum loudness), the gustier the wind. And by counting how often the chimes ring over time we can tell how steady the wind is.

Students will test this hypothesis by listening to and collecting data from wind chimes. Before they go outside, have them check the weather and record the wind speed value in a science notebook.

Take students outside to a location with some wind and hang the chime. Before students begin collecting data, have them practice their observation skills by just quietly listening for 1-2 minutes.

Ask: *What did you notice?*
How often did the chimes ring?
How loud were they on a scale of 1 - 5

Give students a sound meter for data collection and demonstrate how to use it. Tell students to *record the values at 15 second intervals over a* 5 min period. After the data is collected, have them calculate and record: maximum loudness and average loudness.

Discuss observations and refer back to hypothesis:

*Were **you able** to prove your hypothesis?*
How accurate was your data compared to the predicted weather?
Do you think after enough data collection and observation, you would get more accurate to the forecasted wind speed? Why or why not?

2 Build a Wind Chime

Invite students to make wind chimes. Provide them with a variety of materials that produce different sound vibrations. Give plenty of time to experiment with the different sounds made by each material.

***Ask:** Which of these materials do you think would be most effective for capturing sound data? Why?*

Discuss the various things that influence sound.

Provide students with a variety of materials to choose from and encourage them to create a design plan before they begin building. When they have their first iteration done, have them to test it using a fan, re-iterate, refine, and complete a final build. Continue collecting data.

Discuss: Which designs *were **the** most effective? Best materials?* Best shape? Length of strings?

3 Artistic Interpretation

Take an artistic approach and capture wind chime data using colors, shapes, pictures to draw representations of what is heard including presence, direction and speed of the wind. Provide clipboards, paper, and colored pencils.

Have students reflect on differences between using data points and art to capture sound. Pair/share:

- *Which experience did you prefer, why?*
- *From the data about wind you collected, identify and describe the part that gave you the most insight.*
- *Looking at artistic images of wind, what characteristics can you interpret most clearly? What artistic choices helped you see these characteristics?*
- *Which of the two representations do you think is more effective? Why?*

Discuss: What is the value of incorporating an artistic *approach?*