Noise Busters

Challenge

Draw a map of your school. Label your classroom and several other important rooms and locations such as Hallways, the Library, the Cafeteria, or the Music Room. Make a copy of the map and then label each map with a different time. Both times should be during the school day, but preferably when different things are happening. For example one time could be during science class, while another is at end of the day.

What will we investigate?

During this activity you will explore your school, trying to find the noisiest and quietest places. How do we measure noise? We use units called decibels (dB). The greater the number of decibels, the louder the noise. By measuring the sound intensity in different parts of the school, you can create a "noise map." By creating two maps, you can use a sound sensor to see if the noise around your school is different at different times of the day.

Equipment and Materials

- einstein™Tablet+ or einstein™Labmate+™ paired with a tablet
- Sound sensor

Before You Begin

Choose five of the areas marked on your map and think about what goes on in your school and at what time. On each map, mark which locations you think will be noisiest and which the quietest. Scientists often start their experiments by imagining what the results will be and then putting them to the test. Now it's time to put your predictions to the test.

Sensor Setup

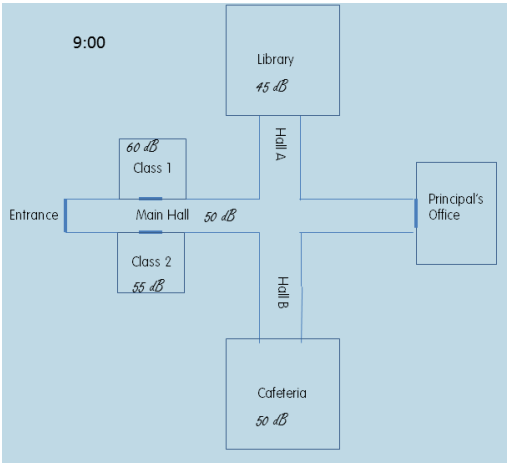
Tap the **Setup** cog ( ) and use the table below to set up the measurement parameters:

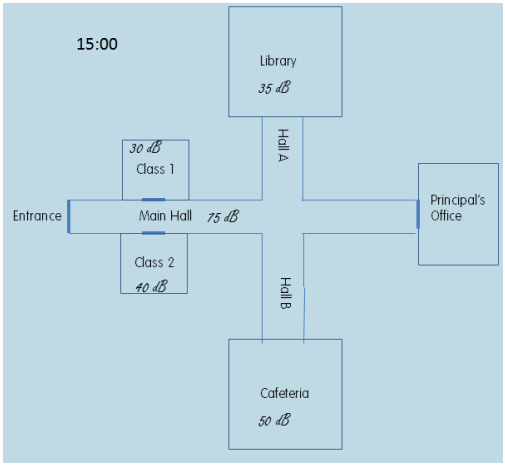
Sensor:	Sound
Rate:	10,000/sec
Duration (S):	5

Experimental Procedure

1. Turn on the einstein™Tablet+ or einstein™Labmate+™ paired with a tablet.
2. Tap the MiLAB ( ) icon to open the application
3. During one of the times marked on your map:
    a. Go to one of the locations marked on your map.
    b. Tap the Meters icon.
    c. Tap the **Run** ( ) button.
    d. Wait 5 seconds.
    e. Mark the sound measurement on your map.
4. Go to each location on your map and repeat this procedure.
5. Repeat this for the second map marked with a different time.

Sample Maps





Understanding the Measurements

1. Where was the noisiest place in the school during your first measurement?
2. Where was the noisiest place in the school during your second measurement?
3. Where was the quietest place in the school during your first measurement?
4. Where was the quietest place in the school during your second measurement?
5. Which time of day was noisiest?
6. How did your measurements match what you predicted? If they didn't match can you explain why?

Using What You Learned

Lots of noise can be unpleasant for students. Can you create a plan to make your school less noisy?

Understanding the Science

There are many factors that go into creating a noisy place – such as the number of students and how loudly they are talking. The size of the room also makes a great difference – in a small room the noise bounces off the walls and makes everything louder than in a large room.