

Music Code with Makey Makey		Grade 4- Light and Sound	
Music Code with Makey Makey	Coding Tool	Scratch and Makey Makey	
	Cross-curricular	Strand A	
Big Ideas <ul style="list-style-type: none">• Sound is a form of energy that travels in waves• Sound is created by vibrations• Real-world actions can be translated into digital responses.	Specific Expectations <p>C2.4 Describe properties of sound, including that sound travels through a medium as a wave and that sound can be absorbed or reflected and modified.</p> <p>C2.5 Explain how vibrations cause sound waves</p> <p>C2.6 Describe how different objects and materials interact with light and sound energy</p> <p>A2.1 Write and execute code in investigations and when modelling concepts, with a focus on producing different types of output for a variety of purposes</p>		
Description <p>In this lesson, students will use Scratch and a Makey Makey to create an interactive project where a sprite plays drums using the Makey Makey. Students will explore the science of sound and how sound waves travel through the air to our ears. This lesson combines basic coding, simple circuitry, and introductory sound science.</p>			

<p>Materials</p> <ul style="list-style-type: none"> - Makey Makey kit - Scratch.mit.edu - Laptop - 2 printed drums - Copper tape - Coding Sheet 	<p>Computational Thinking Skills</p> <ul style="list-style-type: none"> - Sequencing - Conditional Statements
<p>Introduction</p> <p>Explain to students that when a drum is struck, the surface (called the drumhead) begins to vibrate, meaning it moves back and forth rapidly. These vibrations cause the surrounding air particles to also move, creating sound waves. The sound waves travel outward through the air, similar to how ripples move across water when a stone is dropped in. As the sound waves reach our ears, they cause tiny structures inside the ear to move. The brain processes these movements and interprets them as sound. The characteristics of the sound, such as pitch and volume, depend on factors like the size of the drum, the material it's made from, and how forcefully it is struck.</p> <p>Explain to students that they will now be creating a coding program that allows their sprite to play two different drums in Scratch. Once their code is complete, they'll cut out paper drums, connect them to a Makey Makey, and play them, watching how their physical drums respond to the code they've written.</p>	
<p>Action</p> <ul style="list-style-type: none"> • Start with the introduction, explaining how a drum works. • Use the included coding sheet to lead the class in creating the code, adding sprites, and having them react using the Makey Makey. • Connect the Makey Makey using the instructions on coding sheet. 	

Extension

Have students draw a third instrument and add it in the Scratch program, following the same code as the drums. Students can use the up or down arrow to attach their instrument to the Makey Makey.

Additional Resources

A completed version of the code can be found here:

<https://scratch.mit.edu/projects/1081745623>