8.2 Sound Waves

Content Area: **Science**
Course(s): **Science 8**
Time Period: **Marking Period 1**
Length: **20 days**
Status: **Published**

Established Goals/Standards

SCI.MS-PS4-1	Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.
SCI.MS-PS4-2	Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.
SCI.MS-PS4-3	Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.

Technology Standards

TECH.8.1.8.D.2	Demonstrate the application of appropriate citations to digital content.
TECH.8.1.8.D.4	Assess the credibility and accuracy of digital content.
TECH.8.1.8.D.CS2	Demonstrate personal responsibility for lifelong learning.

NJ 21st Century Life and Careers/NJ Career Ready Practices

CAEP.9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.

Interdisciplinary Connections

ELA/Literacy -SL.8.5Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. *(MS-PS4-1)*Mathematics -MP.2Reason abstractly and quantitatively. (MS-PS4-1)MP.4Model with mathematics. (MS-PS4-1)6.RP.A.1Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. (MS-PS4-1)6.RP.A.3Use ratio and rate reasoning to solve real-world and mathematical problems. (MS-PS4-1)7.RP.A.2Recognize and represent proportional relationships between quantities. (MS-PS4-1)8.F.A.3Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *(MS-PS4-1)*

Essential Questions

- How can a sound make something move?

Enduring Understanding

- Objects vibrate when making different sounds to characterize how a vibrating object's motion is tied to the loudness and pitch of the sounds they make.
- Sound needs matter to travel through, and they will use models and simulations to explain how sound travels through matter at the particle level.

Content

- A simple wave has a repeating pattern with a specific wavelength, frequency, and amplitude.
- Describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.
- Graphs and charts can be used to identify patterns in data.
- Waves can be described with both qualitative and quantitative thinking.
- Waves are reflected, absorbed, or transmitted through various materials.
- A sound wave needs a medium through which it is transmitted.
- Because light can travel through space, it cannot be a matter wave, like sound or water waves.
- The structure of a wave can be modified to serve particular functions by taking into account properties of different materials and how materials can be shaped and used.
- Structures can be designed to use properties of waves to serve particular functions.
- Waves can be used for communication purposes.

Accommodations and Modifications

Accommodations and Modifications according to student IEP, 504, I&RS goals, and/or gifted status.

Assessment

Summative assessment: students use words and pictures, develop a model to show how hitting a cymbal loudly would damage a musician's ears. Making sure their model shows how energy is transferred from the cymbal to the eardrum.

Formative Assessments

- Participation/Observations
- Questioning
- Discussion Circles
- Science Notebook
- Exit Slips
- Peer/Self Assessment
- Rubrics
- Teacher-created project-based assessment
- Turn & Talk

Alternate Assessments

- Teacher-created project-based assessment
- Alternate running records
- Discussion Circles
- Turn and Talks

Benchmark Assessments

- Teacher-created assessment

Resources

- BrainPOP
- Discovery Education
- OpenSciEd