

Educational Resources from *Phenomenon Science Education*

Student Proficiency Goals for **NGSS 1-PS4-1**



Information about 1-PS4-1

NGSS Performance Expectation 1-PS4-1.

Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

Clarification Statement.

Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.

Assessment Limits.

No specific assessment limits are listed for this Performance Expectation.

Science and Engineering Practice (Planning and Carrying Out Investigations)

- Plan and conduct investigations collaboratively to produce evidence to answer a question.

Disciplinary Core Idea (PS4.A: Wave Properties)

- Sound can make matter vibrate, and vibrating matter can make sound.

Crosscutting Concept (Cause and Effect)

- Simple tests can be designed to gather evidence to support or refute student ideas about causes.

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Student Proficiency Goals

SEP (Planning and Carrying Out Investigations):

- Students work together to create investigation plans to describe and collect evidence that sounds can cause materials to vibrate.
- Students work together to create investigation plans to describe and collect evidence that vibrating materials can cause sounds.
- As part of their investigation plans, students identify and/or describe the materials to be used and how they will be used.
- As part of their investigation plans, students identify what evidence will be collected.
- Students conduct an investigation based on their plan and collect evidence.
- Students use evidence collected from their investigations to answer questions about the relationship between vibrating materials and sound.

DCI (PS4.A: Wave Properties):

- Students know that sound can make materials vibrate.
- Students know that vibrating materials can make sound.

CCC (Cause and Effect):

- Students consider the cause-and-effect relationship between sound and vibrating materials and between vibrating materials and sound.
- Students consider how to design investigations to collect evidence demonstrating that vibrations can cause sound and sound can cause vibrations.