**Connecting to the *Next Generation Science Standards* (NGSS Lead States 2013):**

**K-2 Exploring Sounds**

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| 1-PS4 Waves and Their Applications in Technologies for Information Transfer[*https://www.nextgenscience.org/dci-arrangement/1-ps4-waves-and-their-applications-technologies-information-transfer*](https://www.nextgenscience.org/dci-arrangement/1-ps4-waves-and-their-applications-technologies-information-transfer)*The chart below makes one set of connections between the instruction outlined in this article and the NGSS. Other valid connections are likely; however, space restrictions prevent us from listing all possibilities. The materials, lessons, and activities outlined in the article are just one step toward reaching the performance expectations listed below*.  |
| 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.** |

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| Science and Engineering Practices |
| [Constructing Explanations and Designing Solutions](http://www.nap.edu/openbook.php?record_id=13165&page=67) | ***Students:**** describe if a sound is loud or soft, high or low.
* use descriptive words to explain what their favorite sound is.
 |
| Disciplinary Core Idea |
| PS4.A: Wave Properties* [Sound](http://www.nap.edu/openbook.php?record_id=13165&page=136) can make matter vibrate and vibrating matter can make sound.
 | * make observations about how objects move when placed near or on an object that is producing sound.
 |
| Crosscutting Concepts |
| Cause and Effect | * explain what happens to a sound changes as it moves towards or away from you.
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**3-5 Thinking About Energy Transfer**

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| **4-PS3 ENERGY**<https://www.nextgenscience.org/dci-arrangement/4-ps3-energy> *The chart below makes one set of connections between the instruction outlined in this article and the NGSS. Other valid connections are likely; however, space restrictions prevent us from listing all possibilities. The materials, lessons, and activities outlined in the article are just one step toward reaching the performance expectations listed below*.  |
| Performance Expectation4-PS3-2 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

|  |  |
| --- | --- |
| 4-PS3-4. | Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. |

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| Science and Engineering Practices |
| Constructing Explanations and Designing Solutions. | ***Students:***explore different ways that energy can enter a system by participating in different investigations. |
| Disciplinary Core Idea |
| [PS3.B: Conservation of Energy and Energy Transfer](http://www.nap.edu/openbook.php?record_id=13165&page=124)* [Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced.](http://www.nap.edu/openbook.php?record_id=13165&page=124)
* [Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy.](http://www.nap.edu/openbook.php?record_id=13165&page=124)
 | * describe where and how energy is transferred when using different toys.
 |
| Crosscutting Concepts |
| [Energy and Matter](http://www.nap.edu/openbook.php?record_id=13165&page=94) | * explain how a toy would change if they were to add energy similar to what happened in the story.
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**Connecting to the *Common Core Standards* (NGAC and CCSSO 2010):**

This section provides the Common Core for English Language Arts and/or Mathematics standards addressed in this column to allow for cross-curricular planning and integration. The Standards state that students should be able to do the following at grade level.

**English/Language Arts**

Reading Standards for Informational Texts K-5 – Key Ideas and Details

* Grade 1 standard askes students to “ask and answer questions about key details in a text. “
* Grade 4 standard asks students to “refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.”

Language Standards

Writing Standards Research to Build and Present Knowledge

* Grade K standard asks students to “with guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.”
* Grade 4 students will “recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.”

Writing Standards K-5- Text Types and Purposes

* Grade 4 students will “write informative/explanatory texts to examine a topic and convey ideas and information clearly.”

Vocabulary Acquisition and Use is one of the standards for language. This particular standard is across grade levels. “Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade [appropriate] reading and content.”

Speaking and Listening Standards K–5—Presentation of Knowledge and Ideas

• Grade 1 students will “add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.”

* Grade 3 students will “report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. “

Furthermore, the Common Core for ELA provide a standard related to the Range of Text Types for K–5 where it indicates that students in K–5 should apply the Reading standards to a wide range of texts to include informational science books