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Unit Plan Overview for Traveling Interdisciplinary Literacy Trunk (TILT)

Title of Unit: **Sound Energy – Can You Hear Me Now?** Grade Level: **4** Duration: **3 weeks**

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Alignment with South Carolina Academic Standards for two or more content areas:

Science	**Social Studies**	**ELA**	**Mathematics**
4.P.4B1: Plan and conduct scientific investigations to test how different variables affect the properties of sound (including pitch and volume). **4.P.4B2:** Analyze and interpret data from observations and measurements to describe how change in vibration affects the pitch and volume of sound. **4.P.**4B3 Define problems related to the communication of information over a distance and design devices or solutions that use sound to solve the problem. 4.S.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understanding	**4-5.2** Explain the motivations and methods of migrants and immigrants, who moved West, including economic opportunities, the availability of rich land, and the country's belief in Manifest Destiny.	**RI 5.1** Ask and answer inferential questions to analyze meaning beyond the text; refer to details and examples within a text to support inferences and conclusions. **W.2** Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.	**4.MDA.2** Solve real world problems involving distance/ length, intervals of time within 12 hours, liquid volume, mass, and money using the four operations.

of science content.			

Connections to one or more Exploratories:

Art	**Music**	**Technology**	**PE**
Design a musical instrument.	Musicians must understand the basic properties of sound including pitch and volume.	The telegraph started a revolution in the way information was shared, such as cell phones and the Internet.	

Summary of activities showing connections between content areas	In this three week instructional unit, students will learn that sound is a form of energy. They will be able to explain that sound is a form of energy produced by vibrating objects. Students will: * Complete a KWL chart on sound energy *Read non-fiction text on sound energy *Develop a scientific experiment in small groups to test their hypothesis of how sound travels through matter. * Write in science journals during their investigations * Students will design and explain their model to the class *Explore pitch using rulers and string. * Work with their partners to investigate the sounds produced by plucking different lengths of a ruler Have them record what they see and hear. Have them write notes in their science notebooks about what they see and hear. *Read non-fiction books about Samuel Morse. *Practice using Morse code with a partner. *Build a working model of a telegraph.
Text Set (This might include children's literature, films, maps, brochures, magazines, websites, and other resources)	*Loud, Soft, High, Low* By: Nataly Rosinsky *What do you do with an Idea?* By Yamada Kobi *Loud, Soft, High, Low by:* Jennifer Boothroyd *Working With Sound By:* Ed Catherall *Hands on Science:* Sound and Light By Maggie Hewston Web-Sties and on-line sources Straw Kazoo: www.pbskids.org How sounds travel through matter: www. Teachengineering.org

Essential Questions	**What is sound energy?** **How is sound produced?** **What are the properties of sound?** **How do specific properties of sound alter it?** **How does sound travel?** **What happens to the volume and clarity of sound over time?** **What were the problems faced in the past regarding communicating information over a distance?**
Content Area Vocabulary	**Science** **energy** **vibration** **frequency** **pitch** **wavelength** **tension** **volume** **compression** **force** **intensity** **clarity** **Math** **meter** **kilometer** **centimeter** **inches** **feet** **miles** **length** **Social Studies** **Manifest Destiny** **telegraph** **ELA** **Greek** **Latin** **affix** **predict**
Pre-Writing and Writing Activities	*Use of graphic-organizers *Research using the Internet *PowerPoint Presentation *Journal Writing
Instructional Strategies	*Observation *Small/Whole group *Hands-on activities *Inquiry based *Integrating technology

Accommodations, Modalities of Learning, and Differentiating Instruction	**Accommodations:** Seating Extended time to complete task Peer buddies **Modalities of Learning:** Auditory Visual Kinesthetic Tactile **Differentiating Instruction:** Book levels Grouping Students with Different Levels of Learning Different types of assessments
Assessment	Formative and summative writing assessments Project assessment

Attached:

1. Implementation Guide
2. Daily Lesson Plans in Learning Cycle, 5E, or 7E format