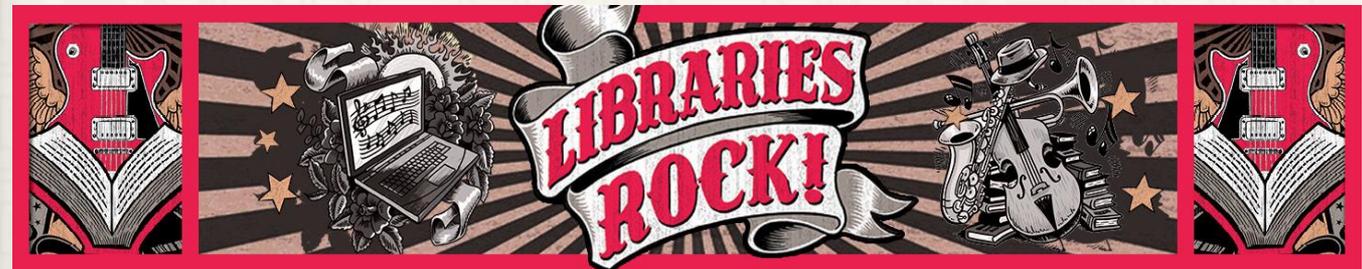


# 2018 STEM Reading Connections – Libraries Rock!

Nebraska Extension



# Our Team

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# 4-H STEM Reading Connections

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Engages youth in extended 4-H learning opportunities through the Collaborative Summer Library Program.



**4-H GROWS HERE**

# Goals

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- Provide 4-H youth development opportunities to youth.
- Offer educational resources to librarians and youth development professionals.
- Spark an interest in 4-H programs.

# Target Audience

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## YOUTH:

- Early Childhood
- Elementary
- Middle School



# How the Program Works

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- Match 4-H curriculum with the Collaborative Summer Library Program theme
- Series of 4 customizable lessons
- Available to libraries, afterschool programs, 4-H summer camps, schools, youth development professionals
- Evaluations—Youth, Presenter

# Libraries Rock! Resources

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# Lesson Plan Format



## Acoustics Rock!

2018 STEM Reading Connections—Libraries Rock!

Grade Level  
Adaptable Pre K - Middle School

Lesson Length  
60 minutes

### STEM Careers

- Instrument Designer
- Acoustics Engineer
- Audiologist
- Sound Engineer Technician
- Video Game Sound Designer
- Music Data Journalist

### Lesson Authors

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The 4-H STEM Reading Connections program engages youth in extended 4-H learning opportunities in partnership with the Collaborative Summer Library Program.

### Learning Objectives

By the end of the lesson, students should be able to:

- Describe the difference between acoustical qualities of various materials
- Describe how different shapes can increase the volume of sound
- Explain how kazoo's create sound

### Materials List

- Chart Paper and Markers to Record
- Scissors
- Permanent Markers
- Clear Tape
- Masking Tape
- Paper
- Shape Template (optional)
- Kazoos
- Small circles for kazoo's made from aluminum foil, transparency, construction paper, foam (preschool)

### Preparation

- Make book selection
  - Make a physical fitness activity selection
  - Choose lesson activities that will accommodate your audience
  - Decide on walking adventure on various surfaces
  - Download a FREE decibel reader app
  - Set up Testing Station
- Use masking tape to make an X on the table where students will hold their kazoo's. Place a second piece of tape where the decibel reader will stay for testing, 12 inches away.
- Prepare inserts of kazoo's (preschool)
  - Gather supplies for Sound Stroll (middle school)



Try a physical fitness activity prior to the lesson to encourage active engagement and thinking!

Choose a book to read and talk about the different sounds music can make. Discuss the quality and characteristics of different sounds.

### Introduction

During this lesson, students will learn about acoustic qualities in building layout and design. They will also discover that acoustic devices; such as speakers, megaphones, and instruments; usually include a shape that increases the volume of the sound as it moves through the air. The specific shape determines how much the sound is amplified.

### Opening Questions

- What does it mean to amplify sound?
- How does a kazoo work?
- Think about the shoes you wear and the surfaces you walk on. How is sound related to these two things?

Today we are going to be acoustical engineers and design a shape that amplifies, or increases the volume of the sound from a kazoo. We will be using a decibel reader to record our sound levels.

### Activity 1: Shape Up

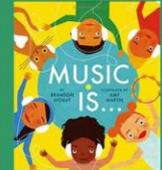
Break into small groups of 2 or 3. Explain how a kazoo and decibel reader each work. (A decibel reader measures volume since people hear sound waves differently.) Model using a kazoo by saying the word "who". You may want to share a chart with common noise levels and the decibel reading.

Give each student a kazoo and have them write their names on it with a permanent marker. Tell them to keep track of their kazoo and not to share them due to germs!

### Suggested Book Titles

#### Early Childhood

*Music I...* by Brandon Stosuy and Amy Martin

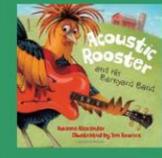


#### Elementary

*How Sound Moves* by Sharon Coan



*Acoustic Rooster and His Barnyard Band* by Kwame Alexander



# Acoustics Rock!

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- Early Childhood
  - How a Kazoo Works
- Elementary
  - Shape Up
- Middle School
  - Sound Stroll



# Rockin' Sound Waves

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- **Early Childhood**
  - Listening Walk
- **Elementary**
  - 4 Sound Wave Stations
- **Middle School**
  - Sound in 3 Forms of Matter



# Listen Up

- **Early Childhood**
  - Mystery Noises
- **Elementary**
  - Model Eardrum
- **Middle School**
  - Auditory Mapping



# Rock N' Roll Instruments

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- **Early Childhood/Elementary/Middle School**
  - Create Musical Instruments
  - Write Jingles



# Additional Resources in Box

## 2018 Nebraska 4-H Summer Reading Program



**Programming for Grades 3rd - 5th**  
Provided by Nebraska Extension -  
Cedar County

**10:00 - 11:00 a.m.**  
at the Hartington City Auditorium

### June 13 - Acoustics Rock!



Have you ever wondered why some rooms are louder than others? Architectural acoustics is the science and engineering of achieving a good sound within a building. What goes into making a room so you can hear someone whisper from across the room? In this lesson, you will learn how the shape of acoustical devices amplify sound.

### June 20 - Rockin' Sound Waves



Did you know that sound is a type of energy made by vibrations? There is a relationship between a sound's wavelength and its pitch. In this lesson, you will explore elements of sound by participating in four experimental stations.

### June 27 - Listen Up



Have you ever wondered how sound reaches your brain? We depend upon our hearing for safety, entertainment and to communicate with our loved ones. In this lesson, we will explore the anatomy of our ears to learn how sounds travel to our brain for interpretation.

### July 11 - Rock 'n Roll



Did you know everything we use, wear, or play with is engineered? Even musical instruments! By manipulating different parts of the design process you can explore the science of sound vibrations. In this lesson you will have the opportunity to let your community know just how much their "Library Rocks" by designing a working musical instrument and coming up with your own creative jingle.

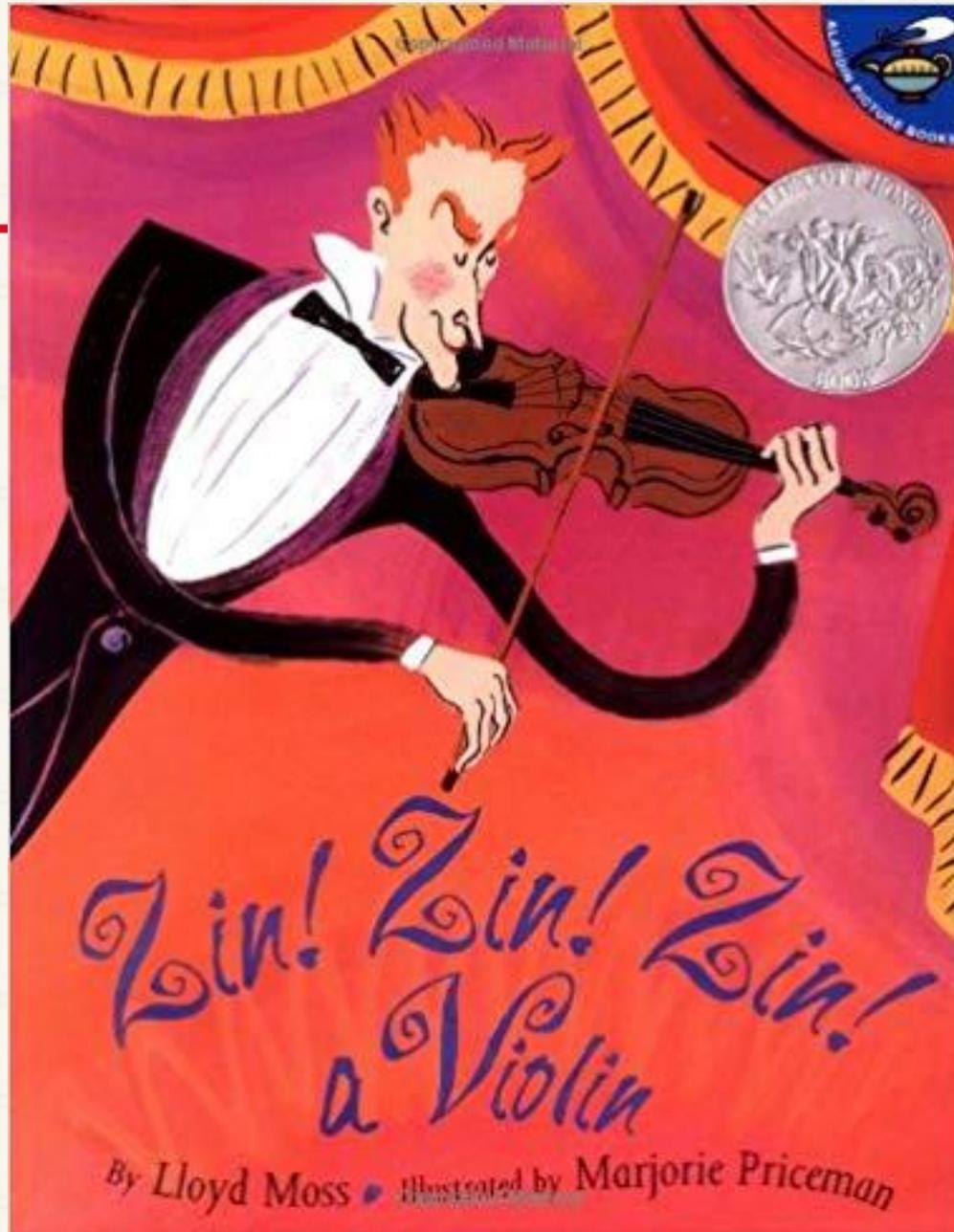


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- Complete Book List
- Physical Fitness Activities
- Marketing Materials





# Roll and Recap

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# 2019 Collaborative Summer Reading Theme

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## A Universe of Stories (Space)



- Past Themes:
  - 2017: Build a Better World
  - 2016: On Your Mark, Get Set, Read!
  - 2015: Every Story Has a Hero
  - 2014: Fizz, Boom, Bang, READ!

# Additional Questions

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