Georgia Performance Standards Framework

<table>
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<th>Unit Five Organizer:</th>
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<tbody>
<tr>
<td>6 weeks</td>
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<tr>
<td>Sound</td>
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<tr>
<td>First Grade</td>
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**OVERVIEW:** In this unit students will:
- Determine that sound is produced from vibrations
- Recognize that sounds have different pitches and volumes
- Identify sounds with the appropriate emergency type (match sirens with appropriate emergency vehicle)

**STANDARDS ADDRESSED IN THIS UNIT**

**Focus Standards:**
S1P1. Students will investigate light and sound.
   c. Investigate how vibrations produce sound
d. Differentiate between various sounds in terms of (pitch) high or low and (volume) loud and soft.
e. Identify emergency sounds and sounds that help keep us safe

**STANDARDS ADDRESSED IN THIS UNIT**

**Supporting Standards:**
S1CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.
   a. Raise questions about the world around them and be willing to seek answers to some of the questions by making careful observations and measurements and trying to figure things out.

S1CS2. Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.
   a. Use whole numbers in ordering, counting, identifying, measuring, and describing things and experiences.
S1CS3. Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities.
   a. Use ordinary hand tools and instruments to construct, measure, and look at objects.
   b. Make something that can actually be used to perform a task, using paper, cardboard, wood, plastic, metal, or existing objects.
   c. Identify and practice accepted safety procedures in manipulating science materials and equipment.

S1CS4. Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.
   a. Use a model—such as a toy or a picture—to describe a feature of the primary thing.
   b. Describe changes in the size, weight, color, or movement of things, and note which of their other qualities remain the same during a specific change.

S1CS5. Students will communicate scientific ideas and activities clearly.
   a. Describe and compare things in terms of number, shape, texture, size, weight, color, and motion.
   b. Draw pictures (grade level appropriate) that correctly portray features of the thing being described.
   c. Use simple pictographs and bar graphs to communicate data.

ELA1LSV1 The student uses oral and visual strategies to communicate. The student
   a. Follows three-part oral directions.
   b. Recalls information presented orally.
   c. Responds appropriately to orally presented questions.
   d. Increases vocabulary to reflect a growing range of interests and knowledge.
   e. Communicates effectively when relating experiences and retelling stories read, heard, or viewed.
   f. Uses complete sentences when speaking

ENDURING UNDERSTANDINGS

- Recognize there are many kinds of sounds
- Recognize there are many sources of sound
- Understand that sound travels away from the source
- Understand that sounds have different pitches
- Understand that the greater distance between you and the source of sound, the weaker (lower volume) the sound
- Sounds are produced by vibrations
- Sounds are heard when they enter the ear.
- Be familiar and recognize emergency sounds
ESSENTIAL QUESTIONS:

- What produces sound?
- How are sounds different?
- How is high and low pitch sound different?
- How are soft and loud sounds alike and different?
- How does the size of an instrument affect its pitch?
- What are different sources of sounds in nature?
- Why do we have emergency sounds?
- What are the sources of emergency sounds?

<table>
<thead>
<tr>
<th>MISCONCEPTIONS</th>
<th>PROPER CONCEPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitch is equal to volume (loudness)</td>
<td>A sound can have a high pitch without having a high volume.</td>
</tr>
<tr>
<td>You see and hear an event at the same time.</td>
<td>You don’t hear the sound until the vibrations reach your ear.</td>
</tr>
<tr>
<td>The pitch of whistles or sirens on moving vehicles is changed by the driver as the vehicle passes.</td>
<td>The sirens sound different because the source of the sound is closer to your ear.</td>
</tr>
</tbody>
</table>

CONCEPTS: KNOW AND DO

**There are different types of sounds.**
- Identify the basic types of sounds
- Describe the characteristics of each type.

**Sound is caused by vibrations**
- Identify that vibrations will cause sounds
- Recognize that vibrations are back and forth motion

EVIDENCE OF LEARNING

- Determine the source of different sounds by matching a picture of the source with the sound.
- Students will group high and low sounds.
- Students will demonstrate a “musical” instrument. Examples include a rubber band, drum, swirl stick.

Language: Sound, soft, loud, pitch, high, low, volume,
High and Low (Pitch) relates to the tone of the sound (not the volume).

- Identify high pitch sounds and low pitch sounds.

Pitch

Students will be able to use a Venn Diagram to compare the sounds and sources of sounds. Through teacher observation, students will be able to sort sounds by pitch.

Emergency Sound

- Identify sounds with appropriate emergency vehicle or event

Siren, ambulance, fire, tornado, pitch, police, fire alarm

Listening center activity – students will hear a sound and have to draw a picture of the vehicle or what is happening. Students will produce an accordion book with pictures of different sources of emergency sounds.

**GRASPS**

Note to Teacher: The chips need to be made ahead of time. Also, the BINGO game may go better if another adult can be the sound producer. This would allow the teacher to be the monitor of the game. Sound clips can be downloaded for free online at a variety of places. Examples include Google Sound Clips, Microsoft Sound Clips, etc.

**Culminating Activity:** GRASPS activity

**Sound BINGO**

**Goal:** Recognize sounds from emergency vehicles and other common sources such as animals. Sounds will also be a different pitches and volumes.

**Role:** Game participant

**Audience:** First Grade class

**Scenario:** The class will play Sound BINGO.
Product:  BINGO Cards

Materials needed: Bingo Cards (see attachment for sample card – scramble pictures such that students will have different cards), Bingo Chips numbered 1 - 25, Computer, DVD player, IPod, CD Player or other sound producing equipment, tracks of various sounds.

Chips can be made by cutting a one inch dial rod into pieces and painting the numbers, 1 through 25, on the chips. You may also create chips with construction paper.

Students will be assessed on the accuracy of their grids. The teacher will assess the placement of the numbered chips (#1 chip goes with first sound, #2 chip goes with second sound, etc)

<table>
<thead>
<tr>
<th>General Timeline</th>
<th>Intro / Pre Assess</th>
<th>Different Sounds</th>
<th>Emergency Sound</th>
<th>Pitch</th>
<th>Volume</th>
<th>GRASPS Development</th>
<th>Post Assess</th>
<th>Reteach or Extend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 Lesson</td>
<td>1 week</td>
<td>1.5 week</td>
<td>1.5 week</td>
<td>1 week</td>
<td>1 lesson</td>
<td>1 Lesson</td>
<td>2-4 Lessons</td>
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</table>
### TASKS

The following collection of tasks represents the level of depth, rigor and complexity expected of all students to demonstrate evidence of learning.

Lessons may take more than one day to complete. Time frames are suggested and depend on your class.

<table>
<thead>
<tr>
<th>Lesson: (1 – 2 days)</th>
<th>How is Sound Produced? (Pre-assessment task)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>This task includes stations where the students can investigate sound. This task can be used to guide future tasks for the students in sound.</td>
</tr>
<tr>
<td></td>
<td>Concepts: Sound can be produced when the object vibrates.</td>
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<tr>
<td></td>
<td>Materials: Rubber band, fork and spoon, empty soda bottle, alarm clock, 4 feet of string, aluminum foil, cotton, bell, aluminum pie pan, toothpicks</td>
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<tr>
<td></td>
<td>Each group of students will be given a collection of materials, preferably the same for every group.</td>
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<tr>
<td></td>
<td>Have students design their own investigation to answer the following:</td>
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<tr>
<td></td>
<td>What materials can make sound?</td>
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<td></td>
<td>Describe the sound.</td>
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<tr>
<td></td>
<td>How is sound produced?</td>
</tr>
<tr>
<td></td>
<td>Each group will share this with the whole class some discoveries they have made.</td>
</tr>
<tr>
<td><strong>Assessment:</strong></td>
<td>Then have students explain what they have observed and what kind of sounds the different materials make.</td>
</tr>
<tr>
<td><strong>Suggestions/Resources:</strong></td>
<td>Informal assessment during station work, Oral presentation rubric</td>
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<tr>
<td></td>
<td>Enlist the music teacher at your school to loan materials or visit your class.</td>
</tr>
</tbody>
</table>
**Lesson: (3 - 5 days)**

**We can make sounds**

**Description:**
This task will allow students to identify sounds that they can make.

**Materials:** Stethoscope (paper towel or toilet paper tubes)

**Concept:** Recognize there are many kinds of sound
- Recognize there are many sources of sound
- Sounds are heard when they enter the ear.

**Questions:**
- What produces sound?
- How are sounds different?

Students will list different ways that they make sounds with their voices and other parts of the body: humming, clapping, snapping fingers, singing, sneezing, etc. Ask them how they hear these sounds. Have them cover their ears and explain what happens to the sound. They should say the sound gets softer (less volume).

Most students will be able to identify sounds that they make externally, but few may think about the heart. The students can make (design or decorate) cardboard stethoscopes and listen to a friend’s heart. The students can then listen to each other’s heart using the stethoscope by holding one end of the stethoscope to their friend’s heart and the other end to their own ear.

Ask students:
- What does your friend’s heart sound like?
- What would your friend’s heart sound like after exercising?
- What would your friend’s heart sound like he/she is sleeping?

Have students exercise and then relax in a resting position. Have students discuss their observations and attempt to explain what is occurring as they are more active or less active.

**Assessment:**
Four Corner Placemats – Four students work in groups. They will write down sounds that they think about and rotate the placemat in the center for others to add to their lists.

**Suggestions/Resources:**
If you have a school nurse, invite her to visit with a stethoscope or participate in this lesson.
<table>
<thead>
<tr>
<th>Lesson: (2 – 3 days)</th>
<th>The sounds around us.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>The picture cards need to be made ahead of time. There needs to be two cards for every object: Two cats, two trucks, two trumpets, two cows, etc. Laminate the cards.</td>
</tr>
<tr>
<td><strong>Materials:</strong></td>
<td>Picture cards</td>
</tr>
<tr>
<td><strong>Concept:</strong></td>
<td>Recognize there are many kinds of sounds</td>
</tr>
<tr>
<td></td>
<td>Recognize there are many sources of sound</td>
</tr>
<tr>
<td><strong>Questions:</strong></td>
<td>What are different sources of sounds in nature?</td>
</tr>
<tr>
<td><strong>Assessment:</strong></td>
<td>Informal Assessment: Matching the correct partners and making the same sounds.</td>
</tr>
<tr>
<td><strong>Suggestions/Resources:</strong></td>
<td>Collect books or toys that make various sounds. These may be helpful to students who have not heard particular animals or other sounds.</td>
</tr>
<tr>
<td>Lesson: (2 – 4 days)</td>
<td>Sounds with Meaning</td>
</tr>
<tr>
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<tr>
<td><strong>Description:</strong></td>
<td>This lesson will focus on sounds related to an emergency or an emergency vehicle.</td>
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<td></td>
<td>Concept: Be familiar and recognize emergency sounds</td>
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<tr>
<td></td>
<td>Question: Why do we have emergency sounds?</td>
</tr>
<tr>
<td></td>
<td>What are the sources of emergency sounds?</td>
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<tr>
<td></td>
<td>One option is to have the respective vehicles visit the school, such the students can meet the drivers and hear the sirens. Have the students ask question such that they will understand which emergency corresponds to that vehicle and sound. As an alternate to having visitors bring the actual vehicles to the school, consider using online video or sound clips.</td>
</tr>
<tr>
<td><strong>Assessment:</strong></td>
<td>Informal Assessment: Observations</td>
</tr>
<tr>
<td><strong>Suggestions:</strong></td>
<td>If your school has a resource officer or DARE instructor from local law enforcement, ask him or her to help coordinate visits with fire, ambulance, and police cars.</td>
</tr>
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<table>
<thead>
<tr>
<th>Lesson: (1 day)</th>
<th>How is Sound Produced?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Materials: Simple Comb, wax paper</td>
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<tr>
<td></td>
<td>Concept: Sounds are produced by vibrations</td>
</tr>
<tr>
<td></td>
<td>Questions: What are different sources of sounds in nature?</td>
</tr>
<tr>
<td></td>
<td>Provide students with a new comb and piece of wax paper. Hold the wax paper against the comb. Sound can be produced by humming with lips almost on the wax paper. The vibrations can be felt. Pitch can be changed in a variety of ways: changing pitch of the hum, tightening the wax paper, etc.</td>
</tr>
<tr>
<td><strong>Assessment:</strong></td>
<td>Performance Assessment: Grade according to accuracy of bottles</td>
</tr>
<tr>
<td><strong>Suggestions/Resources:</strong></td>
<td><strong>The Wonder of Sound</strong>, Rainbow Educational Media, 1994 <a href="http://www.unitedstreaming.com">www.unitedstreaming.com</a></td>
</tr>
<tr>
<td></td>
<td>A good follow up will be to have different instruments such as drums. Have the students feel the drum heads so they can feel the vibrations.</td>
</tr>
</tbody>
</table>
### Lesson: (1-2 days)  **String Telephone**

**Description:** Materials needed: two sturdy paper cups, two paper clips, strong string, partner, nail)

- Concept: Sounds are produced by vibrations
- Sounds are heard when they enter the ear
- Questions: What produces sound?

Use a nail to punch a hole into the bottom center of each cup. Put one end of a string into each hole. To keep the string from slipping out of the hole, tie it to the end of a paper clip. Have the students separate until the string is tight. One student speaks into the cup while the other listens. Students can try different types of strings. Ask the students what will happen if the string is not tight? Let them investigate this.

Other questions for the students to investigate:
- What will happen if the string is longer?
- Which method can you hear better, through the string or through the air?
- How would you stop sound from reaching you on the string?
- How can you make a party line (aka three-way calling)?
- Can you text message using the string telephone?

**Assessment:** Informal assessment: Teacher observation

**Suggestions/Resources:** Have the students investigate what they can do to make the telephone better.
<table>
<thead>
<tr>
<th>Lesson: (2 – 3 days)</th>
<th>High and Low Pitch</th>
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<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Materials: 3 feet of narrow plastic pipe, hacksaw, colored tape, items for decoration</td>
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</tbody>
</table>
|                     | Concept: Understand that the greater distance between you and the source of sound, the weaker (lower volume) the sound  
|                     | Understand that sounds have different pitches |
|                     | Questions: What is the difference between high and low pitch sounds?  
|                     | What is the difference between soft and loud sounds?  
|                     | What causes the different pitches? Volumes? |
|                     | For the teacher to do: Cut the pipe into 5 smaller pipes with different lengths. Arrange the pipes in order of length. Have the students blow across each tube and note differences. |
|                     | Have students write in their science journal about the observations they made. Encourage students to make sketches. |
|                     | Then have students attempt to make louder sounds. Note that they often will claim that the greater the pitch, the greater the volume. |
| **Assessment:**     | Informal Assessment: Teacher observation  
|                     | Performance Assessment: Science Journal |
| **Suggestions/Resources:** | An extension is to have students relate what they have just observed to instruments today (e.g. drums, trumpets to baritones to tubas, soprano to baritone saxophones, etc.) Also, ask a parent volunteer to cut the plastic pipes. |
### Lesson: 1 day  
**Straws and Pitch Demo**

| Description | Materials: straws and scissors  
Concept: Understand that sounds have different pitches  
Questions: What is the difference between high and low pitch sounds?  
What is the difference between soft and loud sounds?  
What causes the different pitches? Volumes?  
This is a demonstration for pitch and length of instrument. Chew on a straw to flatten one end. Then cut the flattened end to form a V with the tip pointing outward. Blow through the chewed end. As you cut the other end of the straw, shortening the straw, the pitch will increase.  
|  
| Assessment | Informal assessment: Teacher observation  
| Suggestions/Resources | This may take some practice. Try using the widest straws you can find.  
|  
| Lesson: (1 – 2 days)  
**Change In Volume** | Materials: Empty oatmeal container and/or large plastic cup, dry cereal, large balloon, scissors, strong rubber band, pencil with eraser or drumstick  
Concept: Differences in volume.  
Questions: How can you make a drum louder?  
How can you make a drum less noisy?  
To make the drum, stretch the balloon over the open end of the container. You may have to cut the opening of the balloon to allow it to stretch. Place the rubber band around the edge to secure the balloon. If possible, provide a variety of materials that would allow students to make drums of varying sizes. Have the students predict what will happen the drum is hit while cereal is placed on the drumhead. Then have the students perform this task and explain what happened. Have the children predict what will happen if they hit the drumhead harder. What differences were observed? (Hitting the drum harder -with more energy - will produce louder sounds.)  
Have students write in their science journal about what happened.  
|
### Lesson: (2 days) Change in Pitch in soda Bottles

**Description:** Obtain 5 – 8 glass soda bottles. Fill the bottles with water at various heights. Have the students rank the bottles in order from low pitch to high pitch. One option is to set the activity up as a center. Provide an extra set of empty bottles and some water. Allow students to experiment with creating their own set of bottles at various pitches/water levels.

**Assessment:** Performance Assessment: Assess according to accuracy of the order of bottles, and the ability to recreate the scenario with additional bottles.

**Suggestions/Resources:** Have groups write songs and perform for the class using the bottles.

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### TEACHER RESOURCES

- **Hands-on technology**
  
  [http://www.galaxy.net/~k12/index.shtml#subject](http://www.galaxy.net/~k12/index.shtml#subject)

  [http://www.cln.org/themes/sound.html](http://www.cln.org/themes/sound.html)

- **Sound activity**
  


- **Sound the Alarm: Firefighters at Work**, Rainbow Educational Media, 1994 [www.unitedstreaming.com](http://www.unitedstreaming.com)

Suggested Literature

Butzow, Carol M. and John W. Butzow. *Science Through Children’s Literature An Integrated Approach*

Kincaid, Doug and Peter Coles. *Quiet and Loud*, Rourke Publications, 1984


Prokofiev, Peter and the Wolf (recording)


Teacher Note: In order to create the Sound Bingo card on one sheet of paper, cut and paste the rows from page 16 to the bottom of the rows on page 15.
<table>
<thead>
<tr>
<th>B</th>
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Georgia Department of Education  
Kathy Cox, State Superintendent of Schools  
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