

# Sound and Light

Content Area: **Science**  
Course(s):  
Time Period: **Trimester 1**  
Length: **6-8 Weeks**  
Status: **Published**

## Course Pacing Guide

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This pacing guide should include the vision and mission of the course. It will be the same for all units in your course.

The simpler, the better. Pacing guide flaws come when they are too constricting, so big ideas is best (Cobb, McClain, de Silva Lamberg, & Dean, 2003; Wiggins, Wiggins, & McTighe, 2005)

Unit	MP/Trimester	Weeks
Air and Weather	1st Trimester	6-8 Weeks
Sound and Light	1st Trimester	6-8 Weeks
Plants and Animals	1st Trimester	6-8 Weeks

## Unit Overview

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Students explore these dimensions of the natural world using simple tools and musical instruments. The driving question for the module is how do sound and light interact with objects?

Students learn that sound comes from vibrating objects. They explore how to change sound volume and pitch, and develop simple models for how sound travels from a source to a receiver. With light, students also work with sources and receivers. They find out what happens when materials with different properties are placed in a beam of light, and explore how to create and change shadows and reflections. Students explore how to use sound and light devices to communicate information and compare the ways that animals use their senses (ears and eyes) to gather information about their environment.

## Enduring Understandings

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- Vibration is a rapid back-and-forth motion
- Vibrating objects make sound; a sound always comes from a vibrating source.
- Sounds can make objects vibrate.
- Sound sources can be natural or human-made.
- Ears are one kind of sound receiver.
- Sounds can convey information.
- Sound vibrations travel from a source through a medium (matter) to reach a receiver (ear). Volume is how loud or soft a sound is.
- Pitch is how high or low a sound is.
- High-pitched sounds come from sources that vibrate quickly.
- Large objects tend to vibrate slower than small objects.
- Light sources are objects or systems that radiate, such as lamps, flashlights, candles, and the Sun.
- Light travels from a source in all directions.
- Shadows are the dark areas that result when light is blocked.
- Some materials block light entirely or partially; other materials allow light to travel through.
- The length and direction of a shadow depends on the position of the light source.
- Light travels in straight lines. A mirror can be used to redirect light.
- Mirror images are the result of light reflected from a surface. An image produced by something that reflects, such as a mirror, is always reversed.
- Light is necessary for animals to see.
- Animal eyes are not all the same.
- Light can be used to communicate over long distances

## Essential Questions

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- What is sound?
- How can we change the properties of sound?
- What is shadow?
- How does light travel and change direction?
- How do animals (including humans) use light?

## New Jersey Student Learning Standards (No CCS)

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Ref's	Standard ID	Description
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0x	1-LS1-1	Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.
0x	1-LS1-1.6	Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.
0x	1-LS1-1.6.1	The shape and stability of structures of natural and designed objects are related to their function(s).
0x	1-LS1-1.6.1	Use materials to design a device that solves a specific problem or a solution to a specific problem.
0x	1-LS1-1.LS1.A.1	All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.
0x	1-LS1-1.LS1.D.1	Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs.
0x	1-LS1-2	Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
0x	1-LS1-2.1.1	Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.
0x	1-LS1-2.8.1	Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world.
0x	1-LS1-2.LS1.B.1	Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.
0x	1-LS3-1	Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.
0x	1-LS3-1.1.1	Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.
0x	1-LS3-1.LS3.A.1	Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly, like their parents.
0x	1-LS3-1.LS3.B.1	Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.

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### **Amistad Integration**

Refer to first grade reading curriculum maps.

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### **Holocaust/Genocide Education**

Refer to first grade reading curriculum maps.

## Interdisciplinary Connections

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0xLA.L.1.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 1 reading and content, choosing flexibly from an array of strategies.
0xLA.RI.1.1	Ask and answer questions about key details in a text.
0xLA.RI.1.2	Identify the main topic and retell key details of a text.
0xLA.RI.1.3	Describe the connection between two individuals, events, ideas, or pieces of information in a text.
0xLA.RI.1.4	Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.
0xLA.RI.1.5	Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.
0xLA.RI.1.6	Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.
0xLA.RI.1.7	Use the illustrations and details in a text to describe its key ideas.
0xLA.RI.1.8	Identify the reasons an author gives to support points in a text and explain the application of this information with prompting as needed.
0xLA.RI.1.9	Identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).
0xLA.SL.1.1	Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.
0xLA.SL.1.3	Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
0xLA.W.1.5	With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers and self-reflection, and add details to strengthen writing and ideas as needed.
0xMA.1.MD.C.4	Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
0xMA.1.OA.A.1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

## Technology Standards

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Ref's	Standard ID	Description
0x	TECH.8.2.2	All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the

environment.  
0x TECH.8.2.2.A.CS3 The relationships among technologies and the connections between technology and other fields of study.

## **21st Century Themes/Careers**

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Digital media will be used incorporated in project presentations. This module will develop students' abilities to do and understand scientific inquiry. Students will identify questions, design and conduct scientific investigations to answer those questions, employ tools to gather, analyze, and interpret data. They will use data to construct reasonable explanations, develop and communicate investigations and evidence and understand that scientists use different kinds of investigations and tools to develop explanations using evidence and knowledge. This module will develop and extend students' understandings about science and technology. Students will work collaboratively in teams and use tools and scientific techniques to make better observations

### [Career Database through FOSS](#)

CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CRP.K-12.CRP4.1	Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.
CAEP.9.2.4.A.1	Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
CAEP.9.2.4.A.2	Identify various life roles and civic and work - related activities in the school, home, and community.
CAEP.9.2.4.A.3	Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
CAEP.9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

## **Instructional Strategies & Learning Activities**

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- Activate Prior Knowledge
- Visualization
- Cooperative Learning
- Discovery/Inquiry Based Instruction
- Teacher Modeling
- Guided Practice
- Independent Practice/Application
- Anchor Charts
- Exploration
- Graphic Organizers

- Vocabulary Wall
- Small Group Cooperative Learning
- Provide Specific Feedback
- Observe Systems and Interactions
- Data Recording, Organizing, and Processing
- Check for Understanding
- Effective Questioning
- Whole Group Discussion
- Share Findings with Group

## **Differentiated Instruction**

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- Curriculum Map
- Inquiry/Problem-Based Learning
- Learning preferences integration (visual, auditory, kinesthetic)
- Sentence & Discussion Stems
- Tiered Learning Targets
- Learning through play
- Meaningful Student Voice & Choice
- Relationship-Building & Team-Building
- Self-Directed Learning
- Mastery Learning (feedback toward goal)
- Goal-Setting & Learning Contracts
- Game-Based Learning
- Grouping
- Rubrics
- Jigsaws
- Learning Through Workstations
- Assessment Design & Backwards Planning
- Modified Assessment/Work Product

## **Formative Assessments**

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- Response Sheets
- Student Notebook Entries
- Embedded Assessments
- Student Discussions
- Teacher Observation of Student Exploration
- Student Whiteboards
- Investigation Check (I-Checks)
- Reflective Assessment Practices

## **Summative Assessment**

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- Investigation Checks (I-Checks)

## **Benchmark Assessments**

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- Investigation Checks (I-Checks)

## **Alternate Assessments**

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- Teacher Observation
- Student responses
- Scribe

## **Resources & Technology**

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- Foss Website
- Promethean or Smartboard
- [Foss Web Resources](#)

## **BOE Approved Texts**

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- FOSS Science Resources Sound and Light

## **Closure**

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- Interdisciplinary Extensions (Art, Science, Math, Social Studies, Language Arts)
- Snowstorm - Students write down what they learned on a piece of scratch paper and wad it up. Given a signal, they throw their paper s
- Poster Presentation- Students will work in groups to present the information they learned on a poster
- Gallery Walk - On chart paper, small groups of students write and draw what they learned. After the completed works are attached to the classroom walls, others students affix post-its to the posters to

extend on the ideas, add questions.

- Give a short quiz using technologies like Kahoot
- Have students write down three quiz questions (to ask at the beginning of the next class).
- Question Stems - Have students write questions about the lesson on cards, using [question stems framed around Bloom's Taxonomy](#). Have students exchange cards and answer the question they have acquired.
- Kids answer the following prompts: "What takeaways from the lesson will be important to know three years from now? Why?"
- Ask a question. Give students ten seconds to confer with peers before you call on a random student to answer. Repeat.
- Have kids orally describe a concept, procedure, or skill in simple terms.
- Direct kids to raise their hands if they can answer your questions. Classmates agree (thumbs up) or disagree (thumbs down) with the response.
- Have kids create a cheat sheet of information that would be useful for a quiz on the day's topic.
- Kids write notes to peers describing what they learned from them during class discussions.
- Have students complete the following sentence: "The [concept, skill, word] is like \_\_\_\_\_ because \_\_\_\_\_."
- Ask students to write what they learned, and any lingering questions on an "exit ticket". Before they leave class, have them put their exit tickets in a folder or bin labeled either "Got It," "More Practice, Please," or "I Need Some Help!"
- After writing down the learning outcome, ask students to take a card, circle one of the following options, and return the card to you before they leave: "Stop (I'm totally confused. Go (I'm ready to move on.)" or "Proceed with caution (I could use some clarification on . . .)"
- Students can record themselves on the iPad explaining the concept learned.
- At home extension/connection activities (Students can make their own instrument using materials they have at home)

## **ELL**

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- Alternate Responses (i.e nonverbal cues)
- Sentence Starters
- Visuals
- Extended Time
- Teacher Modeling
- Simplified Written and Verbal Instructions
- Frequent Breaks
- Peer Mentors
- Strategic Partnering
- FOSS Web Spanish Version for materials

## **Special Education**

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List is not inclusive but may include the following accommodations. Please refer to individual IEP accommodations and goals. A few examples include:



- Shorten assignments to focus on mastery of key concepts.
- Substitute alternatives for written assignments (clay models, posters, panoramas, collections, etc.)
- Specify and list exactly what the student will need to learn to pass.
- Evaluate the classroom structure against the student's needs (flexible structure, firm limits, etc.).
- Keep workspaces clear of unrelated materials.
- Keep the classroom quiet during intense learning times.
- Reduce visual distractions in the classroom (mobiles, etc.).
- Provide a computer for written work.
- Seat the student close to the teacher or a positive role model.
- Provide an unobstructed view of the chalkboard, teacher, movie screen, etc.
- Keep extra supplies of classroom materials (pencils, books) on hand.
- Maintain adequate space between desks.
- Give directions in small steps and in as few words as possible.
- Number and sequence the steps in a task.
- Have student repeat the directions for a task.
- Provide visual aids.
- Go over directions orally.
- Provide a vocabulary list with definitions.
- Permit as much time as needed to finish tests.
- Allow tests to be taken in a room with few distractions (e.g., the library).
- Have test materials read to the student, and allow oral responses.
- Divide tests into small sections of similar questions or problems.
- Allow the student to complete an independent project as an alternative test.
- Allow take-home or open-book tests.
- Show a model of the end product of directions (e.g., a completed math problem or finished quiz).
- Stand near the student when giving directions or presenting a lesson.
- Mark the correct answers rather than the incorrect ones.
- Permit a student to rework missed problems for a better grade.
- Average grades out when assignments are reworked, or grade on corrected work.
- Use a pass-fail or an alternative grading system when the student is assessed on his or her own growth.

## 504

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Examples of accommodations in 504 plans include but are not limited to the following. Please refer to individual 504 plan for specific accommodations:

- preferential seating
- extended time on tests and assignments
- reduced homework or classwork
- verbal, visual, or technology aids
- modified textbooks or audio-video materials
- behavior management support
- adjusted class schedules or grading
- verbal testing
- excused lateness, absence, or missed classwork
- pre-approved nurse's office visits and accompaniment to visits

- occupational or physical therapy

## **At Risk**

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Examples may include:

- Use of mnemonics
- Have student restate information
- Provision of notes or outlines
- Concrete examples
- Use of a study carrel
- Assistance in maintaining uncluttered space
- Weekly home-school communication tools (notebook, daily log, phone calls or email messages)
- Peer or scribe note-taking
- Sheets with highlighted instructions
- No penalty for spelling errors or sloppy handwriting
- Follow a routine/schedule
- Teach time management skills
- Verbal and visual cues regarding directions and staying on task
- Adjusted assignment timelines
- Visual daily schedule
- Immediate feedback
- Work-in-progress check
- Pace long-term projects
- Preview test procedures
- Film or video supplements in place of reading text
- Cue/model expected behavior
- Use de-escalating strategies
- Use peer supports and mentoring
- Have parent sign homework/behavior chart
- Chart progress and maintain data

## **Gifted and Talented**

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- Focus on effort and practice
- Offer the Most Difficult First
- Offer choice
- Speak to Student Interests
- Allow G/T students to work together
- Encourage risk taking
- Provide challenge activities

