

# SCHOOL DISTRICT OF THE CHATHAMS

## CURRICULUM PROFILE

### Science Grade 1 Full Year

#### Course Overview:

During first grade, students are expected to develop an understanding of the relationship between sound and vibrating materials as well as between the availability of light and the ability to see objects. The idea that light travels from place to place can be understood by students at this level by determining the effect of placing objects made with different materials in the path of a beam of light. Students are also expected to develop an understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs as well as how behaviors of parents and offspring help the offspring survive. The understanding is developed that young plants and animals are like, but not exactly the same as, their parents. Students are able to observe, describe, and predict some patterns of the movement of objects in the sky. The crosscutting concepts of patterns; cause and effect; structure and function; and influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. In the first-grade performance expectations, students are expected to demonstrate grade-appropriate proficiency in planning and carrying out investigations, analyzing and interpreting data, constructing explanations and designing solutions, and obtaining, evaluating, and communicating information. Students are expected to use these practices to demonstrate an understanding of the core ideas.

#### New Jersey Student Learning Standards

*The New Jersey Student Learning Standards (NJSLS) can be located at [www.nj.gov/education/cccs/2020/](http://www.nj.gov/education/cccs/2020/).*

#### Physical Science

- 1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
- 1-PS4-2. Make observations to construct an evidence-based account that objects can be seen only when illuminated.
- 1-PS4-3. Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.
- 1-PS4-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

#### Life Science

- 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.
- 1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
- 1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

#### Earth & Space Science

- 1-ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.

1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year.

### **Technology Standards**

9.4.2.TL.2: Create a document using a word processing application.

9.4.2.TL.3: Enter information into a spreadsheet and sort the information.

9.4.2.TL.4: Navigate a virtual space to build context and describe the visual content.

9.4.2.IML.2: Represent data in a visual format to tell a story about the data

### **21st Century Integration | NJSL 9**

9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.

### **Career Ready Practices**

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11. Use technology to enhance productivity.

### **Interdisciplinary Connections**

#### **English Language Arts**

Writing:

- W.1.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.
- W.1.7 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions).
- W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

Speaking and Listening:

- 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.

#### **Mathematics**

- 1.NBT.B.3 Compare two two-digit numbers based on the meanings of the tens and one digits, recording the results of comparisons with the symbols  $>$ ,  $=$ , and  $<$ .
- 1.NBT.C.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
- 1.NBT.C.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
- 1.NBT.C.6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
- 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 to represent the problem.

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- 1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.
- 1.MD.A.2 Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps.
- 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.

## Units of Study

### Unit 1: Waves: Light and Sound (~30 days)

- How can you prove that you can only see something when someone shines a light on it or if the object gives off its own light?
- What happens to a beam of light when you put different kinds of things in front of it?
- How do instruments (band) make sound?
- How would we communicate over a distance without the use of any of the devices that people currently use?
- How can light or sound be used to communicate over a distance?

### Unit 2: Life Cycles and Survival Structure of Living Things (~30 days)

- How are young plants and animals alike and different from their parents?
- What types (patterns) of behavior can be observed among parents that help offspring survive?
- How can humans mimic how plants and animals use their external parts to help them survive and grow?

### Unit 3: Space Systems (~30 days)

- Can we predict how the sky will change over time?
- What patterns of change can be predicted when observing the sun, moon, and stars?
- What is the relationship between the amount of daylight and the time of year?

## Learning Objectives/Discipline Standards of Practice

### Lesson Objectives:

#### Physical Science

- Sound can make matter vibrate, and vibrating matter can make sound.
- The presence of light in a space causes objects to be able to be seen in that space.
- Objects cannot be seen if there is no light to illuminate them, but the same object in the same space can be seen if a light source is introduced.
- The ability of an object to give off its own light causes the object to be seen in a space where there is no other light.
- People also use a variety of devices to communicate (send and receive information) over long distances.

#### Life Science

- Adult plants and animals can have young.
- External structures are used to help the plant and/or animal grow and/or survive.
- Animals use external structures to capture and convey different kinds of information they need.
- Plants and/or animals respond to information they receive from the environment.

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## Earth Science

- Stars are not seen in the sky during the day, but they are seen in the sky during the night.
- The sun is at different positions in the sky at different times of the day, appearing to rise in one part of the sky in the morning and appearing to set in another part of the sky in the evening.
- The moon can be seen during the day and at night, but the sun can only be seen during the day.
- The moon is at different positions in the sky at different times of the day or night, appearing to rise in one part of the sky and appearing to set in another part of the sky.
- The relationship between the amount of daylight and the time of year.

### Discipline Standards of Practice:

#### Science and Engineering Practices

- Plan and Carryout and Investigation
- Asking Questions and Defining Problems
- Analyzing and Interpreting Data
- Constructing Explanations and Designing Solutions
- Obtaining, Evaluating, and Communicating Information
- Engaging In Argument From Evidence

#### Crosscutting Concepts

- Patterns
- Cause and Effect
- Structure and Function
- Influence of Engineering, Technology, and Science, on Society and the Natural World
- Scientific Knowledge Assumes an Order and Consistency in Natural Systems

### **Instructional Resources and Materials**

*Whole class resources have been identified with an asterisk.*

#### **Resources**

- Picture Perfect Science by Karen Ansberry and Emily Morgan\*
- More Picture Perfect Science by Karen Ansberry and Emily Morgan\*
- Even More Picture Perfect Science by Karen Ansberry and Emily Morgan\*
- Generation Genius

#### **Materials**

- Science Journal

### **Assessment Strategies**

*Assessment is designed to measure a student's mastery of a course standard and learning objective. Assessment can be used for both instructional purposes (formative assessment) and for evaluative purposes (summative assessment).*

The following is a general list of the many forms assessment may take in learning.

- Science Journals
- Investigations
- Class discussions