

**Content Standard 1.2** Living things have different structures and behaviors that allow them to meet their basic needs.

- Animals need air, water and food to survive.
- Plants need air, water and sunlight to survive.

**Content Standard 1.3** Organisms change in form and behavior as part of their life cycles.

- Some organisms undergo metamorphosis during their life cycles; other organisms grow and change, but their basic form stays essentially the same.

**Essential Questions:**

How do living things meet their basic needs?  
How do living things grow and change?

**Focus Question #1** How do animals meet their basic needs?

**Expected performances (A12)** The student will be able to:

- describe the basic needs of an animal (e.g. air, water, food, and shelter).
- identify ways that animals, including humans, obtain air, water, food, and shelter.

**Focus Question #2** How do plants meet their basic needs?

**Expected performances (A13)** The student will be able to:

- describe the basic needs of a plant (e.g. air, water, nutrients, and sunlight). [review from grade 1]
- identify the structures of a plant that are used for obtaining water and sunlight (e.g. roots, stems, leaves) and explain the function of these parts. [review from grade 1]

## Ledyard Public Schools

### Grade 2 Science Curriculum

**Focus Question #3** How do animals move around?

**Expected performances (A14)** The student will be able to:

- a. describe the structures that animals, including humans, use to move around.

**Focus Question #4** What is the life cycle of an animal?

**Focus Question #5** What is metamorphosis?

**Expected performances (A15)** The student will be able to:

- a. describe the life cycles of different species that grow but do not metamorphose [e.g. mammals (including humans), birds, fish].
- b. describe the changes in different organisms, such as frogs and butterflies, as they undergo metamorphosis.
- c. compare the life cycles of those organisms that undergo metamorphosis and those that do not.

#### **Required Activities:**

**Teacher note:** *order live specimens of caterpillars at least 4 weeks in advance of when you want them to arrive. Carefully read The Life Cycles of Butterflies Teachers Manual for instructions and pacing.*

*An excerpt titled “Lively Science” from Exploring Safely, A Guide for Elementary Teachers, is included in the appendix as an information item for teachers.*

**Engage:** What do you need to survive? Students work in partners to draw a picture and write a few sentences about what they think they need to survive. Students will share their drawings with the class and explain their answers. Students will find common needs (food, air, water) and relate these needs to all animals. Read What Animals Need by J. Nguyen to confirm their list of needs. (A12a)

1. Students will create a class KWL chart about animals’ basic needs and life cycles to establish prior knowledge and possible misconceptions (see appendix Lesson 1).

**Teacher note:** *Leveled informational texts about animals and life cycles (Harcourt and Scott Foresman) are available for use in guided reading groups (see Optional Activities appendix for before, during and after reading activities.)*

## Ledyard Public Schools

### Grade 2 Science Curriculum

2. Students complete the grade 1 assessment on basic needs of plants as a pre-assessment. Students review how plants meet their basic needs and identify the structures and functions of plants as needed. (Use From Seed to Plant, Delta Science Reader) (A13a, b)
3. Students research different animals (include mammals [including humans], birds, fish and reptiles) to find out how they meet their basic needs of food, water, air and shelter. They will create a project to illustrate their findings and present this to the class (see appendix Lesson 3). (A12b)
4. After teacher reads How Animals Move Around by A. Hilvert Bruce, students will complete a web to illustrate how animals move and which structures they use for movement (see appendix Lesson 4). (A14a)
5. Students will complete a measurement activity to confirm the idea that living things grow and change(see appendix Lesson (A15a)
6. Students complete the grade 1 assessment on life cycles of plants as a pre-assessment. Students review life cycles of plants to activate prior learning and define the term life cycle (see appendix Lesson 6).
7. After listening to Are You My Mother? By P. D. Eastman, students will make the generalization that most animal babies look like their parents. Students complete a T-chart to show animal babies that look like their parents and those that do not look like their parents (see appendix Lesson 7.) (A15a. b)
8. Students will read two non-fiction articles, one on the platypus and one on the frog. They will complete a Venn diagram comparing their life cycles. Students will define *metamorphosis* (see appendix Lesson 8). Students will choose a book about an animal's life cycle (see life cycle series) and read to decide whether or not their animal undergoes metamorphosis. (A15c)
9. Students observe the metamorphosis of a caterpillar to a butterfly. They will examine their caterpillar and document changes through drawings and written responses. (See Teacher's Guide *Life Cycles of Butterflies* by STC for all lessons.) (A15b)

**Teacher note:** For easy management, do not put student names on caterpillar cups. All caterpillars belong to the class.

### Assessment:

1. Students will match plant parts to their functions (see appendix lesson 2.) (A13a, b)
2. Students will complete a project to explain how animals meet their basic needs (see appendix lesson 3.) (A12a, b)
3. Students will create a web to describe how animals move and the structures used to move (see appendix Lesson 4.) (A14a)
4. Students will calculate their growth since birth to confirm that living things grow (see appendix Lesson 5.) (A15a)
5. Using a Venn diagram, students will compare the life cycle of animals that go through metamorphosis and those that do not (see appendix Lesson 8.) (A15a, b, c)

## Ledyard Public Schools

### Grade 2 Science Curriculum

6. Students complete My Butterfly Journal and both student and teacher will assess with a rubric (see appendix - Rubric for Butterfly Journal.) (A15)
7. Students complete a summative assessment, completing drawings and writing to justify responses (see appendix Summative Assessment.) (A12b, A14a, A15b,c)

### Optional Activities:

Additional non-fiction reading activities and written response to literature on caterpillars are included in the appendix.

Students complete A Tadpole's Life booklet to sequence a tadpole's life cycle.

Leveled reading passages on basic needs and animal life cycles.

Reading selections on animals and life cycles with selected response questions and CMT-type questions.

### Vocabulary:

Amphibian – an animal that has a backbone and live in water when it is young and on land when it is an adult.

Bird - an animal that has a backbone, feathers, wings, and light-weight bones, and lays eggs with a hard shell.

Fish – an animal that has a backbone, scales or rough skin, and fins, lives in water, and breathes with gills.

Function – the job that a part does in an organism.

Insect – an animal with three body parts, six legs, and usually has antennae, wings and compound eyes.

Life cycles – the stages of growth and development that an organism goes through in its lifetime.

Mammal – an animal that has a backbone, and hair or fur, breathes with lungs, gives birth to live young, and feeds milk to its young.

Metamorphosis – the changes in form that some organisms go through during their life cycle.

Organism – a living thing

Structure – a part of a living thing that does a certain job for that organism

Survival – the ability of an organism to meet its basic needs and reproduce

## Ledyard Public Schools

### Grade 2 Science Curriculum

#### Resources:

##### Student:

From Seed to Plant BIG Book (Delta Science Reader)

From Seed to Plant student books (Delta Science Reader)

Plant and Animal Life Cycles (Delta Science Reader)

What Animals Need by J. Nguyen

Life Cycle series (Capstone Press)

Life Cycles Classroom Set (Learner Publications)

Tale of a Tadpole by Karen Wallace

Turtle, Watch me Grow

Born to be a Butterfly

Animals (Harcourt leveled readers)

Animal Life Cycles (Harcourt leveled readers)

Changing Shapes (Harcourt leveled readers)

How Animals Move Around by A. Hilvert-Bruce

Animal Eggs (Scott Foresman leveled readers)

Growing and Changing (Scott Foresman leveled readers)

How Living Things Grow and Change (Scott Foresman leveled readers)

##### Teacher:

The Life Cycle of Butterflies by Science and Technology for Children

##### Internet:

[www.enchantedlearning.com](http://www.enchantedlearning.com)

## Ledyard Public Schools

### Grade 2 Science Curriculum

#### Unit of Study: EARTH

Suggested Time: 4 Weeks

**Content Standard 1.1** The sun appears to move across the sky in the same way every day, but its path changes gradually over the seasons.

- An object's position can be described by locating it relative to another object or background.
- An object's motion can be described by tracing and measuring its position over time.

**Essential Questions:** How can we describe an object's movement over time

**Focus Question #1** Why does the sun seem to move across the sky?

**Focus Question #2** How do shadows change during the day?

**Expected performances (A11)** The student will be able to:

- a. measure the length and direction of shadows at different times of the day. [MATH: GM3.3 b1]
- b. explain how the length and direction of the shadows change throughout the day.
- c. describe the apparent movement of the sun across the sky during the day.

**Teacher note:** (A10) Describe how the motion of objects can be changed by pushing and pulling, has been addressed in Grade 1

#### Required Activities:

**Engage:** Have students draw a picture of an object and its shadow and write sentences to describe how they think the shadow is made. Students will present their pictures and explanations to the class.

1. Students explore their own shadows and identify what is needed to produce a shadow (see Activity 1 "What is a Shadow?" DSM *Sunshine and Shadows* Teachers Guide.) (A11a)

**Teacher note:** *My Shadow*, by Robert Louis Stevenson can be found in the appendix.

2. Students read What Makes A Shadow? by Clyde Robert Bulla and answer written response questions to explain how shadows are made (see appendix Lesson 2.) (A11a)

## Ledyard Public Schools

### Grade 2 Science Curriculum

3. Students observe and record how a shadow changes due to the movement of the sun. They infer that shadow changes are caused by changes in the sun's position in the sky (see Activity 4 "Shadows Change Places" DSM *Sunshine and Shadows* Teachers Guide.) (A11a, b)
4. Students read Sunshine and Shadows Delta Science Reader and answer written response question to explain why shadows change length throughout the day (see appendix Lesson 4.) (A11b,c)
5. Students vary the position of a light source in relation to an object and infer that shadow length depends on the angle at which light shines on an object (see Activity 9 "Shadows Long and Short" DSM *Sunshine and Shadows* Teachers Guide.) (A11b)
6. Students observe and record the position of the sun in relation to the school at three times throughout the day. They will repeat this activity for several days. Students will conclude that the sun appears to move across the sky in the same way every day (see appendix Lesson 6.) (A11c)
7. **Teacher demonstration:** Using the GeoSafari Solar System Model (and/or a globe and flashlight) students observe the actual movement of the earth compared to the sun. Students will explain in writing, why the sun seems to move across the sky (see appendix Lesson 7.) (A11c)

### Assessment:

1. Students complete written response to What Makes a Shadow? to describe how shadows are made (appendix Lesson 2.) (A11a)
2. Students complete "Shadows Change Places" (appendix Lesson 3.) (A11a, b)
3. Students complete a written response question to explain why shadows change length throughout the day (appendix Lesson 4.) (A11b, c)
4. Students will explain in writing, why the sun seems to move across the sky (appendix Lesson 7.) (A11c)

### Optional Activities:

Any activity from DSM *Sunshine and Shadows* Teachers Guide.

Ground Hog Day – measuring shadows

Leveled Reading selections with written response questions.

**Grade 2 Science Curriculum**

**Vocabulary**

shadow – a dark area made when an object blocks light

sun – a star in the sky

**Resources Needed:**

**Student:**

Sunshine and Shadows BIG book (Delta Science Reader)

Sunshine and Shadows student book (Delta Science Reader)

What Makes a Shadow? By Clyde Bulla

Exploring Earth and Space by Wolf Sheton (Scott Foresman leveled readers)

Earth and Space by Harriet Starsbury (Scott Foresman leveled readers)

Guide to the Constellations (Scott Foresman leveled readers)

The Sun Our Nearest Star by F. Branley

GeoSafari Solar System model

White plastic meter sticks

**Teacher:**

*Sunshine and Shadows* Teacher Guide, Delta Science Module

**Internet:**

<http://micro.magnet.fsu.edu/optics/activities/students.investigatingshadows.html> - lesson plans, student activities

Ledyard Public Schools

Grade 2 Science Curriculum

Unit of Study: SCIENCE AND TECHNOLOGY IN SOCIETY

Suggested Time: 8 Weeks

**Content Standard 2.4** Human beings, like all other living things, have special nutritional needs for survival.

- The essential components of balanced nutrition can be obtained from plant and animal sources.
- People eat different foods in order to satisfy nutritional needs for carbohydrates, proteins and fats.

**Essential Question:** How do you keep your body healthy?

**Focus Question #1:** What are nutritious foods?

**Focus Question #2:** What types of foods does your body need to stay healthy?

**Expected performances (A23)** The students will be able to:

- a. identify foods that will promote good health.
- b. classify foods by their basic food groups (e.g. dairy products, meat, grains, fruits and vegetables).
- c. describe the components of a balanced diet (carbohydrates, proteins, and fats).

**Focus Question #3:** Where do people get the foods they eat?

**Expected performances (A24)** The students will be able to:

- a. identify the sources of common foods.
- b. describe how people in different cultures use different food sources to meet their nutritional needs.

**Required Activities:**

1. Students use the Food Pyramid to learn about balanced diets and to make healthy choices. They complete blank pyramids to make smart choices to stay healthy (see *Little Scientists Nutrition Unit: Activities 1.1, 1.2, 1.3.*) (A23a,c)
2. Students identify the sources of basic food groups and plan their own healthy meal (see *Little Scientists Nutrition Unit: Activities 1.4. 1.5*) (A24a)

## Ledyard Public Schools

### Grade 2 Science Curriculum

3. Students explain that foods contain nutrients that our body needs to grow and stay healthy. They test foods for fats and draw and label their results. (see *Little Scientists Nutrition Unit: Activities 2.1, 2.2, 2.3*) (A23b)
4. Students locate several countries on a map and learn how people in different countries get their nutrition. (see *Little Scientists Nutrition Unit: Activities 2.4.*) (A24b)

**Teacher Note:** Check for food allergies. Students should be aware of the safety rule to never put things in their mouth during science class, unless the teacher tells them it is alright to do so. Students MAY taste different foods such as rice cakes and seaweed if they choose.

5. Students learn about the parts of the digestive system and their function by modeling (acting out) (see *Little Scientists Nutrition Unit: Activities 3.1, 3.2, 3.3, 3.4*)
6. Students decide on kinds of exercise to keep their bodies healthy. Students record their pulse before and after exercise and respond to questions in their science journals. (see *Little Scientists Nutrition Unit: Activities 4.1, 4.2, 4.3, 4.4*)

### Assessment:

Students answer selected response questions dealing with nutrition and write to explain the importance of calcium and exercise for a healthy body (see *Little Scientists Nutrition Unit Written Assessment* at end of teacher manual. A copy can also be found in the appendix)

**Teacher note:** question #4 is optional.

### Optional Activities:

Using Rookie Read About Health books, students research a food group. Working with others that read about the same food category, students prepare a group presentation to share with the class.

Students create a class chart of daily snacks and organize them by food group. Teacher focuses on the importance of healthy snacks, and repeats this activity several times throughout the year.

### Vocabulary

Digestion – process of breaking down food so our bodies can use it

Food pyramid – a guide that tells how many times a day you should eat different types of food to stay healthy

## Ledyard Public Schools

### Grade 2 Science Curriculum

#### Resources Needed:

**Student:**     Fats, Oils and Sweets by C. Smalley  
                  Fruits and Vegetables by S. DerKazarian  
                  Grains by C. Alexander  
                  Proteins by R. Fontes  
                  Dairy by S. DerKazarian

#### Teacher Resources:

*Little Scientists Nutrition kit* and teachers manual  
Healthy Eating, Go Facts (Newbridge)

#### Internet Resources:

[www.mypyramid.gov](http://www.mypyramid.gov) classroom materials, games, posters, coloring pages and For Kids section  
[www.americanheart.org](http://www.americanheart.org) children's health, worksheets, songs, and games to learn about the heart  
[www.kidshealth.org](http://www.kidshealth.org) parent, kids and teen sites, nutrition games and movies of digestive system

## Ledyard Public Schools

### Grade 2 Science Curriculum

#### Unit of Study: PHYSICAL

Suggested Time: 6 Weeks

**Content Standard 2.1** Materials can be classified as solid, liquid or gas based on their observable properties.

- Solids tend to maintain their own shapes, while liquids tend to assume the shapes of their containers, and gases fill their containers fully.

**Essential Question:** Where can we find examples of states of matter?

**Focus Question #1:** What are properties of solids, liquids and gasses?

**Expected performances (A18)** The student will be able to:

- a. define matter (anything that takes up space) and give examples.
- b. identify the three states of matter as a solid, liquid and gas.
- c. describe the physical properties of solids (e.g. maintain their own shape), and give examples.
- d. describe the physical properties of liquids (e.g. tend to assume the shape of the container) and give examples
- e. describe the physical properties of gasses (e.g. fill the entire container). and give examples
- f. describe differences in the physical properties of solids and liquids.

#### Required Activities:

1. Students define matter and identify the three states of matter by using activities involving sorting, making models and acting out different states of matter (see *Little Scientists Different States of Matter Unit*. Activities 1.1, 1.2, 1.3, 1.4) Students read Properties (Delta Science Reader) to confirm their new learning. (A18a,b)

**Teacher note:** *Leveled non-fiction texts about states of matter (Harcourt and Scott Foresman) are available for use in guided reading groups (see appendix for before, during and after reading activities.)*

2. Students use water to experience the three states of matter. They learn about the water cycle through acting out the process. Students record information in their science notebooks using pictures, labels and complete sentences. (see *Little Scientists Different States of Matter Unit*. Activities 2.1, 2.2, 2.3, 2.4, 2.5) (A18b)
3. Students change water from one state to another and describe the physical changes. Students respond in writing to questions about the activities. (see *Little Scientists Different States of Matter Unit*. Activities 3.1, 3.2, 3.3) (A18c,d,e,f)

## Ledyard Public Schools

### Grade 2 Science Curriculum

#### Optional Activities:

Students investigate chemical changes. *Little Scientists Different States of Matter Unit*. Activities 4.1, 4.2, 4.3

#### Assessment:

Students complete selected response questions dealing with states of matter. They use a line graph and a bar graph to interpret data (see *Little Scientists Different States of Matter Unit Written Assessment* in Teachers Manual. A copy of this assessment can also be found in the appendix.) (A18b-f)

#### **Vocabulary**

Gas – a state of matter where the material fills the entire container

Liquid – a state of matter where the material takes the shape of the container

Matter – anything that takes up space

Solid – a state of matter that keeps its own shape

#### Resources Needed

##### Student:

Air is Everywhere by Megan McDonald

Matter by Kim Fields

Properties of Matter by Ann Jacobs

Matter Matters (Harcourt leveled reader)

Solid or Liquid by Brenda Parkes

Observing and Classifying Matter (Harcourt leveled reader)

Forms of Water (Harcourt leveled reader)

Properties (Delta Science Reader)

Solids and Liquids (FOSS)

**Grade 2 Science Curriculum**

**Teacher:**

*Little Scientists Different States of Matter kit* and teachers manual

**Internet:**

**Curriculum Alignment with CT Standards for Scientific Inquiry, Literacy and Numeracy**

**GRADES 2 PHYSICAL**

<b>Expected Performances</b>		<b>Required Activities</b>		
		<b>Activities 1.1 – 1.4</b>	<b>Activities 2.1 – 2.5</b>	<b>Activities 3.1 – 3.3</b>
AINQ. 1	Make observations and ask questions about objects, organisms and the environment.	<b>X</b>	<b>X</b>	<b>X</b>
AINQ. 2	Use senses and simple measuring tools to collect data.			
AINQ. 3	Make predictions based on observed patterns.			
AINQ. 4	Read, write, listen and speak about observations of the natural world.	<b>X</b>	<b>X</b>	
AINQ. 5	Seek information in books, magazines and pictures.	<b>X</b>	<b>X</b>	<b>X</b>
AINQ. 6	Present information in words and drawings.	<b>X</b>	<b>X</b>	<b>X</b>
AINQ. 7	Use standard tools to measure and describe physical properties such as weight, length and temperature.			
AINQ. 8	Use nonstandard measures to estimate and compare the sizes of objects.			
AINQ. 9	Count, order and sort objects by their properties.	<b>X</b>		
AINQ. 10	Represent information in bar graphs.			

**Curriculum Alignment with CT Standards for Scientific Inquiry, Literacy and Numeracy**

**GRADES 2 EARTH**

<b>Expected Performances</b>		<b>Required Activities</b>					
		<b>What is a Shadow, What Makes a Shadow?</b>	<b>Shadows Change Places</b>	<b>Shadows Change Length</b>	<b>Shadows Long and Short</b>	<b>Observe position of sun</b>	<b>Teacher Demonstration</b>
AINQ. 1	Make observations and ask questions about objects, organisms and the environment.	X	X	X	X	X	X
AINQ. 2	Use senses and simple measuring tools to collect data.		X	X			
AINQ. 3	Make predictions based on observed patterns.		X		X		
AINQ. 4	Read, write, listen and speak about observations of the natural world.	X	X	X	X		X
AINQ. 5	Seek information in books, magazines and pictures.	X		X			
AINQ. 6	Present information in words and drawings.	X	X		X	X	
AINQ. 7	Use standard tools to measure and describe physical properties such as weight, length and temperature.		X				
AINQ. 8	Use nonstandard measures to estimate and compare the sizes of objects.						
AINQ. 9	Count, order and sort objects by their properties.						
AINQ. 10	Represent information in bar graphs.						

**Curriculum Alignment with CT Standards for Scientific Inquiry, Literacy and Numeracy**

**GRADES 2 LIFE**

<b>Expected Performances</b>		<b>Required Activities</b>	<b>Basic Needs of Plants Life Cycle of Plants</b>	<b>Basic Needs of Animals</b>	<b>Measurement Activity</b>	<b>Metamorphosis vs. non-</b>	<b>Butterfly Activities</b>
AINQ. 1	Make observations and ask questions about objects, organisms and the environment.				<b>X</b>	<b>X</b>	<b>X</b>
AINQ. 2	Use senses and simple measuring tools to collect data.				<b>X</b>		
AINQ. 3	Make predictions based on observed patterns.						
AINQ. 4	Read, write, listen and speak about observations of the natural world.	<b>X</b>	<b>X</b>			<b>X</b>	<b>X</b>
AINQ. 5	Seek information in books, magazines and pictures.	<b>X</b>	<b>X</b>			<b>X</b>	<b>X</b>
AINQ. 6	Present information in words and drawings.	<b>X</b>	<b>X</b>			<b>X</b>	<b>X</b>
AINQ. 7	Use standard tools to measure and describe physical properties such as weight, length and temperature.				<b>X</b>		
AINQ. 8	Use nonstandard measures to estimate and compare the sizes of objects.						
AINQ. 9	Count, order and sort objects by their properties.						
AINQ. 10	Represent information in bar graphs.						

**Curriculum Alignment with CT Standards for Scientific Inquiry, Literacy and Numeracy**

**GRADES 2 STS**

<b>Expected Performances</b>		<b>Required Activities</b>					
		<b>Activities 1.1 – 1.3</b>	<b>Activities 1.4 – 1.5</b>	<b>Activities 2.1 – 2.3</b>	<b>Activity 2.4</b>	<b>Activities 3.1 – 3.4</b>	<b>Activities 4.1 – 4.4</b>
AINQ. 1	Make observations and ask questions about objects, organisms and the environment.						
AINQ. 2	Use senses and simple measuring tools to collect data.						
AINQ. 3	Make predictions based on observed patterns.						
AINQ. 4	Read, write, listen and speak about observations of the natural world.	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
AINQ. 5	Seek information in books, magazines and pictures.	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
AINQ. 6	Present information in words and drawings.	<b>X</b>	<b>X</b>	<b>X</b>			
AINQ. 7	Use standard tools to measure and describe physical properties such as weight, length and temperature.						
AINQ. 8	Use nonstandard measures to estimate and compare the sizes of objects.						
AINQ. 9	Count, order and sort objects by their properties.						
AINQ. 10	Represent information in bar graphs.						