"Our mission is to prepare each student to be a successful and responsible member of society."
North Smithfield School District

Second Grade Science Curriculum

North Smithfield Scope and Sequence SCIENCE Curriculum: K-12

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Insects Unit Design - Grade 2

The **Insects Module** provides experiences that heighten students' awareness of the diversity of animal forms. They come to know firsthand the life sequences of a number of insects. In each investigation an insect is introduced, and students observe structures and behaviors, discuss their findings, and ask questions. Students observe life cycles of insects and compare the stages of metamorphosis exhibited by each species.

RI Statements of Enduring Knowledge - (Established Goals):
LS 1 All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, and species).
LS 3 Groups of organisms show evidence of change over time (structures, behaviors, and biochemistry).

Related Rhode Island GSE's (Understandings)	**RI Assessment Targets** Assessment Evidence *****High Emphasis Targets**
LS1 (K-2) –1 **Students demonstrate an understanding of classification of organisms by …** **1a** distinguishing between living and non-living things. **1b** identifying and sorting based on similar or different external features. **Ic** observing and recording the external features that make up living things (e.g. roots, stems, leaves, flowers, legs, antennae, tail, shell). **LS1 (K-2)-2** **Students demonstrate understanding of structure and function-survival requirements by…** **2a** observing that plants need water, air, food, and light to grow; observing that animals need water, air, food and shelter to grow.	******LS1 (K-4) - INQ+POC –1*** ***Sort/classify different living things using similar and different characteristics. Describe why organisms belong to each group or cite evidence about how they are alike or not alike.*** Investigation 3, Part 2, pp. 12-20 Science Stories, pp. 3-34 Science Resources, pp. 3-55 Investigation 1, Part 2, pp. 16-25 Investigation 2, Part 2, pp. 14-19 Investigation 1, Parts 1-2, pp. 8-21 Investigation 4, Parts 3-4, pp. 19-27 ***LS1 (K-4) SAE -2*** *Identify the basic needs of plants and animals in order to stay alive. (i.e., water, air, food, space).* Investigation 1, Part 1, pp.8-15 Investigation 2, Part 1, pp. 8-13 Investigation 5, Part1, pp. 10-15

LS1 (K-2)–3 **Students demonstrate an understanding of reproduction by …** **3a** observing and scientifically drawing (e.g. recording shapes, prominent features, relative proportions, organizes and differentiates significant parts observed) and labeling the stages in the life cycle of a familiar plant and animal. **3b** sequencing the life cycle of a plant or animal when given a set of pictures.	***LS1 (K-4) POC –3*** *Predict, sequence or compare the life stages of organisms – plants and animals (e.g., put images of life stages of an organism in order, predict the next stage in sequence, compare two organisms*). Investigation 1, Parts 1-3, pp. 8-25 Investigation 2, Parts 1-3, pp. 8-24 Investigation 3, Parts 1-3, pp. 8-26 Investigation 4, Parts 1-5 pp. 10-31 Investigation 5, Parts1-3, pp. 10-24 Investigation 1, Part 3, pp. 22-25 Investigation 2, Part 3, pp. 20-24 Investigation 3, Part 3, pp. 21-26
LS1 (K-2)–4 **Students demonstrate understanding of structure and function-survival** **requirements by…** **4a** Identifying the specific functions of the physical structures of a plant or an animal (e.g. roots for water; webbed feet for swimming).	***LS1 (K-4) FAF –4*** *Identify and explain how the physical structures of an organism (plants or animals) allow it to survive in its habitat/environment (e.g., roots for water; nose to smell fire)* Investigation 1, Parts 1-2, pp. 8-21 Investigation 2, Parts 1-2, pp. 8-19 Investigation 4, Parts 4-5, pp. 23-31 Science Stories, pp. 8-13

Words in **bold** are important for science vocabulary development, and should be used for word walls.

Investigation-Time (45 min.periods)	Investigation	Focus Questions (Essential Questions)	Big Ideas (Understandings)
1.1-(2)	Mealworms	• What do insects (mealworms) need? • What are the structures and behaviors of mealworms?	• Insects need air, food water and space • Live **organisms** need to be treated with care and respect

1.2-(1)	Larva, Pupa, Adult	• How do mealworms grow and change? • What are the structures and behavior of mealworm larvae, pupae, adults?	• Insects have **characteristic structures and behaviors** • The **structures** of some insects change as the insect grows • As insects grow, they molt their hard, external covering • Adult insects have a **head, thorax and abdomen.**
1.3-(1)	Life Cycle	How do new mealworms begin?	• The **life cycle** of the beetle is egg, larva, pupa, and adult which produces eggs
2.1-(1)	Waxworms	• What are waxworms? • What do waxworms need?	• Insects need air, food water and space
2.2-(1)	Larva, Pupa, Adult	• How do waxworms grow and change? • What are the structures and behaviors of waxworms larvae, pupae, and adults?	• The **structure** and **behaviors** of waxworms change as they grow • Larvae produce silk • Waxworms and mealworms have similar **structures** and **behaviors**
2.3-(ongoing)	Life Cycle	• What is the life cycle of the waxworm?	• The **life cycle** of the waxworm is egg, larva, pupa, and adult moth which produces eggs
3.1-(ongoing)	Eggs	• How do insects (milkweed bugs) begin their life? • What do insects eggs look like?	• Insects hatch from eggs • Live **organisms** need to be treated with care and respect
3.2-(ongoing)	Habitats	• What do milkweed bugs need? • How do their need their needs compare to those of other insects?	• Needs of insects include air, food , water and space, and these are met in different ways for different insects
3.3-(ongoing)	Growing Milkweed Bugs	• What is the life cycle of the milkweed bug? • Do all insects go through larval and pupal stages? • How are all adult insects the same and different?	• As insects grow, they molt their hard external covering • Insects have three body parts: **head, thorax and abdomen** • Insects and other animals have different **structures** that help them grow and survive • The life cycle of some insects is egg, nymph stages, and adult, which produces eggs.
4.1-(1)	Eggs	• Do insects begin as eggs?	• Live **organisms** need to be treated with care and respect
4.2-(ongoing)	Larvae	• What do silkworms need to live?	• Insects hatch from eggs • Insects need air, food water and space
4.3-(ongoing)	Close Observations	• What are the structures and behaviors of silkworm larvae? • How do they compare to other insect larvae?	• Silkworms larvae have unique **behaviors** and **structures** • Larvae molt as they grow

Pebbles, Sand and Silt Unit Design – Grade 2

The **Pebbles, Sand, and Silt Module** consists of four sequential investigations, each designed to introduce concepts in earth science. The investigations provide experiences that heighten students' awareness of rocks as earth materials and natural resources. They will come to know rocks by many names and in a variety of sizes. Pebbles and sand are the same material—just different in size.

Grade 2

RI Statements of Enduring Knowledge - (Established Goals):

ESS1 - The earth and earth materials as we know them today have developed over long periods of time, through continual change processes.

Related Rhode Island GSE's (Understandings)	**RI Assessment Targets** Assessment Evidence *****High Emphasis Targets**
ESS1 (K-2)–1 **Students demonstrate an understanding of earth materials by …** **1a** describing, comparing, sorting rocks and soils by similar or different physical properties (e.g., size, shape, color, texture, smell, weight). **1b** recording observations/ about physical properties. **1c** using attributes of properties to state why objects are grouped together (e.g., rocks that are shiny or not shiny).	******ESS1 (K-4) INQ –1*** ***Given certain earth materials (soils, rocks or minerals) use physical properties to sort, classify, and describe them.*** Investigation 1, Parts 1-5, pp. 8-29 Investigation 2, Parts 1-4, pp. 8-29 Investigation 4, Parts 1-3, pp. 8-25 Science Stories, pp. 3-9 Investigation1, Parts 2, 4, pp. 13-17, 22-25 Investigation 2, Parts 1-4, pp. 8-29 Investigation 4, Part 1, pp. 8-14 Investigation 1, Parts 3-4, pp. 18-25 Investigation 2, Part 2, pp. 14-17

ESS1 (K-2) –2 **Students demonstrate an understanding of processes and change over time within earth systems by …** **2a** conducting tests on how different soils retain water (e.g., how fast does the water drain through?).	******ESS1 (K-4) INQ –2*** ***Use results from an experiment to draw conclusions about how water interacts with earth materials (e.g., percolation, erosion, frost heaves).*** Investigation 4, Home/School Connection, p. 28
ESS1 (K-2) –6 **Students demonstrate an understanding of properties of earth materials by…** **6a** identifying which materials are best for different uses (e.g., soils for growing plants, sand for the sand box).	***ESS1 (K-4) FAF -6*** *Given information about earth materials explain how their characteristics lend themselves to specific uses* Investigation 3, Parts -5, pp. 8-29 Science Stories, pp. 16-19, 24-25

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Investigation-Time (45min. periods)	**Investigation**	**Focus Questions** (Essential Questions)	**Big Ideas** (Understandings)
1.1-(1)	Three Rocks	• How are rocks different? • What happens when you rub rocks together?	**Rocks** have a variety of **properties** When rocks rub together, some (softer) rocks may be chipped or scratched, or make rock dust
1.2-(1)	Washing Three Rocks	• What happened when you washed the rocks?	**Rocks** have a variety of **properties** When rocks are washed in water, the colors or sparkling qualities are enhanced
1.3-(1)	First Sorting	• How can some rocks be the same?	**Rocks** can be sorted by their **properties**
1.4-(1)	Sorting Games	• How many ways can we sort rocks?	Rocks can be sorted by their **properties**
1.5-(ongoing)	Start A Rock Collection	• What kind of rocks can we find around us?	**Rocks** are all around us **Rocks** are the solid material of the earth
2.1-(1)	Screening River Rocks	• How can rocks be sorted by size?	Screens can be used to sort the sizes of **earth materials** Rock sizes include sand, small gravel, large gravel, small pebbles, and large pebbles

Investigation-Time (45min. periods)	Investigation	Focus Questions (Essential Questions)	Big Ideas (Understandings)
2.2-(1)	River Rocks By Size	• How else can rocks be sorted by size?	**Rocks** can be categorized visually by size **Rock** sizes include sand, small gravel, large gravel, small pebbles, and large pebbles **Rocks** larger than pebbles are cobbles **Rocks** larger than cobbles are boulders
2.3-(1)	Sand And Silt	• Is there an earth material smaller than sand?	Sand often contains smaller particles called silt Water can be used to sort the sizes of earth materials
2.4-(1)	Exploring Clay	• Is there an earth material smaller than silt?	Clay particles are very small, even smaller than silt
3.1-(1)	Rocks In Use	• How do people use earth materials?	**Earth materials** are natural resources The **properties** of **earth materials** make each suitable for specific uses **Earth materials** are commonly used in the construction of buildings and streets
3.2-(1)	Looking at Sandpaper	• What does sand do for sandpaper?	The **properties** of different **earth materials** make each suitable for specific uses Different sizes of sand are used in sandpaper to changes the surface of wood from rough to smooth
3.3-(1)	Sand Sculptures	• How else can sand be used?	The properties of different **earth materials** make each suitable for specific uses **Earth materials** are used to make sculptures
3.4-(1)	Clay Beads	• What can be made with clay?	The **properties** of different **earth materials** make each suitable for specific uses **Earth materials** are use to make jewelry and sculptures
3.5-(1)	Making Bricks	• How are bricks made?	The **properties** of different **earth materials** make each suitable for specific uses Simple bricks are made by combining clay soil with plant material
4.1-(1)	Homemade Soil	• What is in dirt?	**Soil** is a mixture of **earth materials** **Humus** is decayed material from plants and animals The ingredients of soil can be observed by mixing soil with water, shaking it, and letting it settle
4.2-(1)	Soil Search	• Are all soils the same?	**Soils** vary from place to place **Soils** have properties of color and texture Different **soils** differ in their ability to support plants
4.3-(ongoing)	Studying a Local Soil	• How are soils different?	**Soils** can be composed of humus and different amounts and sizes of **rocks**

Solids & Liquids Unit Design - Grade 2

The **Solids and Liquids Module** provides experiences that heighten students' awareness of the physical world. Matter with which we interact exists in three fundamental states: solid, liquid, and gas. In this module first and second graders have introductory experiences with two of these states of matter, solid and liquid.

RI Statements of Enduring Knowledge - (Established Goals):

PS1- All living and nonliving things are composed of matter having characteristics properties that distinguish one substance from another (independent of size or amount of substance).

PS3 – The motion of an object is affected by forces.

Related Rhode Island GSE's (Understandings)	**RI Assessment Targets** Assessment Evidence *****High Emphasis Targets**
PS1 (K-2)-1 **Students demonstrate an understanding of characteristic properties of matter by…** 1a identifying, comparing, and sorting objects by similar or different physical properties (e.g., size, shape, color, texture, smell, weight). 1b recording observations/data about physical properties. 1c using attributes of properties to state why objects are grouped together (e.g., things that roll, things that are rough). **PS1 (K-2)-2** **Students demonstrate an understanding of states of matter by…** 2a describing properties of solids and liquids.	******PS1 (K-4) – INQ–1*** ***Collect and organize data about physical properties in order to classify objects or draw conclusions about objects and their characteristic properties (e.g., temperature, color, size, shape, weight, texture, and flexibility).*** **Investigation 1**, Parts 1-2, pp. 8-20 **Investigation 2**, Parts 1-3, pp. 10-27 **Investigation 1**, Parts 1-2, pp. 8-20 **Investigation 2**, Parts 2-3, pp. 15-27 **Investigation 1**, Part 2, pp. 17-20 ***PS1 (K-4) – POC–2*** *Make a prediction about what might happen to the state of common materials when heated or cooled or categorize materials as solid, liquid, or gas.* **Investigation 1**, Parts 1-3, pp. 8-24 **Investigation 2**, Parts 1-3, pp. 10-27 **Science Stories**, pp. 3-13

Related Rhode Island GSE's (Understandings)	**RI Assessment Targets** Assessment Evidence *****High Emphasis Targets**
2b identifying and comparing solids and liquids.	**Investigation 1**, Parts 1-3, pp. 8-24 **Investigation 2,** Parts 1-3, pp. 10-27 **Science Stories**, pp. 3-13 **Investigation 2**, Science Extension, p. 31 **Science Stories**, pp. 14-17 **FOSS Web, Activity**: Change It

Investigation-Time (45min. periods)	Investigation	Focus-Essential Questions	Big Ideas
1.1-(1)	Introduce Solids	• How can solids be described?	• Solids are one state of matter • Solid materials have properties that separate them from other states of matter • We use our senses to observe the properties of solids
1.2-(1)	Sort Solid Objects	• In what ways are some solids the same?	• Solids can be sorted by their properties • We use our senses to observe the properties of solids • Solid materials have properties that separate them from other states of matter
1.3-(1)	Construct With Solids	• How can the properties of solids be used?	• Solid materials have distinct uses based on their properties • Engineers are scientists who use their knowledge of materials to design useful objects and structures
2.1-(1)	Liquids In Bottles	• How do liquids differ from each other?	• Liquids are one state of matter. • Liquids have many properties. • Liquids pour and flow.
2.2-(1)	Properties Of Liquids	• How do liquids differ from each other?	• Liquids have many properties.

Investigation-Time (45min. periods)	Investigation	Focus-Essential Questions	Big Ideas
2.3-(1)	Liquid Levels	• How do liquids flow when a bottle is turned upside down? • How does the same amount of liquid look in carious shapes of containers? • In what ways are liquids the same?	• Liquids pour and flow. • Liquids take the shape of their container. • The surface of liquid is level with respect to the ground. • Solids and liquids have distinct properties that separate them as two states of matter
3.1-(1)	Solids In Containers	• Are these materials solid or liquid?	• Solid materials come in all sizes and shapes. • Particles of solid materials can pour like liquids, but maintain their shape. • Solid materials can support denser materials on their surface
3.2-(2)	Separating Soup Mix	• How can mixtures of solid particles be separated?	• Mixtures of solid particles can be separated with a screen • Solid materials come in all sizes and shapes.
3.3-(1)	Solids In Bottles	• How do particles of solids move in bottles?	• Senses of sight, hearing, and touch can be used to observe the properties of materials • Particles of solid materials can pour like liquids, but unlike liquids they maintain their shape. • The behavior of small solids has similarities to and differences from liquids
3.4-(1)	Separating Beads With A Screen	• How do you know which screens to use for separating a mixture of solids?	• Mixtures of solid particles can be separated with a screen.
4.1-(1)	Solids And Water	• What happens when different solids are mixed with water? • How can a mixture of water and solids be separated?	• Some solids change when mixed with water; other do not • Some solids dissolve in water; evaporation leaves the solid behind • Water can be separated from a mixture through evaporation
4.2-(1)	Liquids And Water	• What happens when water is mixed with different liquids?	• Some liquids mix with water • Some liquids forma layer above or below water
4.3-(2)	Toothpaste Investigation	• Is toothpaste a solid, a liquid, a mixture, or some other form of matter?	• Some materials have properties of both solids and liquids • Scientists test materials in many ways in order to compare them to what is known