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

First Grade Science Curriculum

North Smithfield Scope and Sequence SCIENCE Curriculum: K-12

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Air and Weather Unit Design - Grade 1

The **Air and Weather Module** consists of four sequential investigations, each designed to introduce concepts in earth science. The investigations provide opportunities for young students to explore the natural world by using simple tools to observe and monitor change.

RI Statements of Enduring Knowledge - (Established Goals):
LS 2 Matter cycles and energy flows through an ecosystem
ESS 1 The Earth and earth materials as we know them today have developed over long periods of time, through continual change processes
PS 1 All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another *(independent of size or amount of substance)*

Related Rhode Island GSE's (Understandings)	RI Assessment Targets Assessment Evidence
ESS 1(K-2)–3 Students demonstrate an understanding of how the use of scientific tools helps to extend senses and gather data by… **3a** using scientific tools to extend senses and gather data about weather (e.g., weather/wind vane: direction; wind sock: wind intensity; anemometer: speed; thermometer: temperature; meter sticks/rulers: snow depth; rain gauges: rain amount in inches). **ESS 1(K-2)-4 Students demonstrate an understanding of processes and change over time within earth systems …** **4a** observing and recording seasonal and weather changes throughout the school year.	******ESS 1 (K-4) NOS –3*** *Explain how the use of scientific tools helps to extend senses and gather data about weather. (i.e., weather/wind vane: direction; wind sock: wind intensity; anemometer: speed; thermometer: temperature; meter sticks/rulers: snow depth; rain gauges: rain amount in inches).* Investigation 2, Parts 2, 4, pp. 14-19, 24-27 Investigation 3, Parts 2, 4, pp. 12-16, 22-27 ******ESS1 (K-4) INQ+SAE –4*** *Explain how wind, water, or ice shape and reshape the earth.* Investigation 2, Part 1, pp. 8-13 Investigation 4, Parts 1-2, pp. 8-11

Related Rhode Island GSE's (Understandings)	RI Assessment Targets Assessment Evidence
ESS 1 (K-2)-5 Students demonstrate an understanding of processes and change over time within earth systems by … **5a** observing, recording, and summarizing local weather data. **5b** observe how clouds are related to forms of precipitation (e.g., rain, sleet, snow). **ESS 2 (K-2)-7 Students demonstrate an understanding of temporal or positional relationships between or among the Earth, sun, and moon by …** **7a** observing that the sun can only be seen in the daytime, but the moon can be seen sometimes at night and sometimes during the day. **7b** observing that the sun and moon appear to move slowly across the sky. **7c** observing that the moon looks slightly different from day to day. **9a** observing that there are more stars in the sky than can easily be counted, but they are not scattered evenly and not all the same in brightness. **PS2 (K-2)-4** **Students demonstrate an understanding of energy by…** **4c** identifying the sun as a source of heat energy.	****ESS1 (K-4) POC –5** Based on data collected from daily weather observations, describe weather changes or weather patterns.* Investigation 2, Part 1, pp. 8-13 Investigation 4, Parts 1-2, pp. 8-11 Investigation 2, Part 3, pp. 20-23 **No further targets for EK ESS2 at the** **K-4 Grade Span** ***PS2 (K-4) – SAE–4*** *Given a specific example or illustration (e.g., simple closed circuit, rubbing hands together), predict the observable effects of energy (i.e., light bulb lights, a bell rings, hands warm up (i.e. a test item might ask, "what will happen when….?)* Investigation 2, Part 2, pp. 14-19 Science Stories, p. 21

Related Rhode Island GSE's (Understandings)	RI Assessment Targets Assessment Evidence
PS2 (K-2)-6 **Students demonstrate an understanding of energy by…** **6a** describing that the sun warms land and water. **6b** describing that objects change in temperature by adding or subtracting heat. **PS3 (K-2)-7** **Students demonstrate an understanding of motion by…** **7a** showing how pushing and pulling moves or does not move an object. .	***PS2 (K-4) – SAE + INQ–6*** *Experiment, observe, or predict how heat might move from object to another.* Investigation 2, Part 2, pp. 14-19 Science Stories, p. 21 Investigation 2, Part 2, pp. 14-19 ****PS3 (K-4) – INQ + SAE–7*** *Use data to predict how a change in force (greater/less) might affect the position, direction of motion, or speed of an object (e.g., ramps and balls).* Investigation 1, Parts 4-5, pp. 21-33 Investigation 3, Part 3, pp. 17-21

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-(1)	Air is there.	How does air interact with objects?	• Air is something real and is called **matter**. • Air takes up **space**.
1.2-(1)	Air under water.	How can I keep paper towel dry under water?	• Air interacts with objects • Air is matter • Air can be captured.
1.3-(1)	Parachutes	How does air effect how a parachute floats to the ground?	• Air is all around objects • **Air resistance** affects how things move.
1.4-(1)	Pushing on Air.	What happens when I push air into a smaller space?	• Air is matter and takes up space • Air can be compressed • The pressure from compressed air can move things
1.5-(1)	Air and Water Fountain	How can I use air to push water around a system?	• Air is matter and takes up space • Air **pressure** can move water.
1.6-(1)	Balloon rockets	How can I use compressed air to propel a balloon rocket?	• Air can be compressed • The **pressure** from compressed air can move things
2.1-(ongoing)	Weather Calendars	How can we keep a record of daily weather conditions?	• **Weather** describes conditions in the air outside. • **Meteorologists** are scientists who study weather. • Scientific journals record what is observable
2.2-(1)	Measuring Temperature	How does a thermometer measure temperature?	• **Temperature** describes how hot or cold the air is. • Temperature is measured with a thermometer. • The unit used to measure temperature is **degrees** Celsius (°C) or degrees Fahrenheit (°F)

Investigation- Time (45 min. periods)	Investigation	Focus Questions (Essential Questions)	Big Ideas (Understandings)
2.3-(ongoing)	Watching clouds	Are all clouds the same? What kind of weather do different clouds bring?	• There are three main clouds. • **Clouds** are made of water drops • **Wind** moves clouds in the sky
2.4-(1)	Measuring Rain	How can we measure the amount of rain that falls?	• **Meteorologists** use rain gauges to measure how much rain or snow has fallen. • Natural sources of water include streams, rivers, lakes (fresh water), and the oceans (salt water)
3.1-(1)	Bubbles in the wind	How can bubbles be used to find out about wind speed and direction?	• Bubbles are filled with air • Wind is moving air. • Bubbles can show the changing direction and speed of the wind.
3.2-(1)	Wind Speed	How do people describe the strength of wind?	• **Meteorologists** use a wind scale to describe the strength of the wind • **Meteorologists** use anemometers to measure the speed of wind
3.3-(1)	Pinwheels	How can we use a pinwheel to observe the wind speed?	• A pinwheel provides evidence about how fast the wind is blowing
3.4-(1)	Wind Vanes	How can we use a wind vane to observe the direction of the wind?	• **Meteorologists** use wind vanes to observe wind direction • A wind vane points in the direction the wind is coming from
3.5-(1)	Kites	How can we use weather instruments to improve kite flying?	• Wind pushes a kite into the sky
4.1-(ongoing)	Weather graphs	How can we organize weather data collected for a month to look for change?	• **Weather** conditions change over time • **Weather** observations can be organized and used to make comparisons

Investigation- Time (45 min. periods)	Investigation	**Focus Questions** (Essential Questions)	**Big Ideas** (Understandings)
4.2-(ongoing)	Comparing seasons	How can we organize weather data taken over different seasons to look for change?	• Daily changes in **temperature**, **precipitation**, and weather type can be observed, compared and predicted • Each **season** has a typical **weather** pattern that can be observed, compared, and predicted • The **sun** can be seen only in the day. • The **sun** heats the **earth** during the day
4.3-(ongoing)	The night sky	What is the night sky and how can we monitor and record our observations to look for change?	• **Weather** occurs at night as well as during the day • The **moon** can be seen at night and sometimes during the day. It looks different every day but looks the same every four weeks • There are more **stars** in the sky than anyone can easily count • The **sun** and the **moon** move across the sky during the day and night and appear in different locations in the sky

Balance and Motion Unit Design – Grade 1

Balance & Motion shows we live in a dynamic world where everything is in motion, or so it seems. But not everything is moving the same way. Some things move from one place to another. Other things go around and around in a rotational motion. Still other things are stationary, stable for a time, balanced on a thin line between stop and go. These are the global phenomena that students experience in this module

Grade 1

RI Statements of Enduring Knowledge - (Established Goals):

PS 3 - The motion of an object is affected by forces.

Related Rhode Island GSE's (Understandings)	**RI Assessment Targets** Assessment Evidence *****High Emphasis Targets**
PS3 (K-2) –7 **Students demonstrate an understanding of motion by…** **7a** showing how pushing/pulling moves or does not move an object. **7b** predicting the direction an object will or will not move if a force is applied to it. **Students demonstrate an understanding of force by…** **7c** showing that different objects fall to earth unless something is holding them up. **PS3 (K-2)–8** **Students demonstrate an understanding of (**magnetic) **force by …** **8a** observing and sorting objects that are and are not attracted to magnets.	******PS3 (K-4)-INQ+SAE –7*** *Use data to predict how a change in force (greater/less) might affect the position, direction of ```motion, or speed of an object (e.g., ramps and balls).* Investigation 2, Parts 1-3, pp. 8-25 Investigation 1, Parts 1-4, pp. 8-28 Investigation 3, Parts 1-3, pp. 6-25 ***PS3 (K-4) INQ+ SAE –8*** *Use observations of magnets in relation to other objects to describe the properties of magnetism (i.e., attract or repel certain objects or has no effect)* Science Stories pp. 18-21

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-(3)	Trick Crayfish	• How many ways can a shape balance?	Objects can be **balanced** in many ways **Counterweights** can help balance an object The way an object can be **balanced** can be changed by counterweighting
1.2-(2)	Triangle and Arch	• How can counterweights help us balance other shapes?	A **stable** position is one that is steady; the object is not falling over The place on which an object balances is called the **balance point** **Counterweights** should be placed low or below an object in relation to the **balance point**
1.3-(1)	The Pencil Trick	• How can a pencil be balanced on its point?	**Counterweights** should be placed low or below an object in relation to the **balance point** The position of an object can be described by relating its location to another object
1.4-(2)	Mobiles	• How do the parts of a mobile stay in stable positions?	A mobile is a system of balanced beams and objects
2.1-(2)	Tops	• How can spinning tops be changed?	Objects and systems that turn on a central axis exhibit **rotational motion** You need a **force** to start a top spinning The amount and position of **mass** affect how the object **rotates**
2.2-(2)	Zoomers	• How can a spinning object be kept in motion?	There are different ways to initiate **rotational motion** The **motion** of an object can be changed by **pushing** or **pulling** Tops and zoomers both spin, but in different ways
2.3-(2)	Twirlers	• How did the different shapes make the twirler move?	Variations in design can influence the **rotational motion** of spinning objects **Air resistance** can act as the force that initiates **rotational motion**
3.1-(2)	Rolling Wheels	• How can a wheel and axle system be changed?	**Wheels** roll down a slope A slope is a surface that is higher on one end than another **Axles** support **wheels** **Wheel-and-axle systems** with **wheels** of different sizes roll toward the smaller **wheel**
3.2-(2)	Rolling Cups	• Can we predict the behavior of the rolling cup? • What happens if weight is added to a rolling cup system?	Cups roll in the direction of the smaller end To roll straight, two cups can be taped together so the ends are the same size The amount and location of an added weight can change the way a system rolls
3.3-(1)	Rolling Spheres	• How can we make a runway that will keep a marble rolling?	**Spheres** are round in all directions and roll in all directions A runway must be high at the start and low at the finish for a sphere to roll the complete length of the runway. Spheres roll down a slope

New Plants Unit Design – Grade 1

The **New Plants Module** provides experiences that heighten young students' awareness of the diversity of life in the plant kingdom. Students care for plants to learn what they need to grow and develop. They observe the structures of flowering plants and discover ways to propagate new plants from mature plants (from seeds, bulbs, roots, and stem cuttings). They observe and describe changes that occur as plants grow, and organize their observations on a calendar and in a journal.

RI Statements of Enduring Knowledge - (Established Goals):

LS1 – All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species)
LS2 – Matter cycles and energy flows through an ecosystem.
LS4 – Humans are similar to other species in many ways, and yet are unique among Earth's life forms.

Related Rhode Island GSE's (Understandings)	**RI Assessment Targets** Assessment Evidence: *****High Emphasis Targets**
LS1 (K-2)-1Students demonstrate an understanding of classification of organisms by… **1a** distinguishing between living and non-living things. **1c** observing and recording the external features that make up living things (e.g., roots, stems, leaves, flowers, legs, antennae, tail, **LS1 (K-2)-2** **Students demonstrate an understanding of structure and function survival requirements by …** **2a** observing that plants need water, air, food, and light to grow; observe 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 1, Part 2, pp. 13-22 Investigation 3, Parts 1-3, pp. 8-25 Science Stories, pp. 3-43 Investigation 1, Part 3, pp. 23-30 Investigation 3, Parts 1-3, pp. 8-25 ******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 2, pp. 13-22 Science Stories, pp. 3-7

Related Rhode Island GSE's (Understandings)	RI Assessment Targets Assessment Evidence: ***High Emphasis Targets
LS1 (K-2)-3 **Students demonstrate an understanding of reproduction by …** **3a** observing and scientifically drawing (e.g., recording shapes, prominent feature, relative proportions, organizes and differentiates significant parts observed) and labeling the stages in the life cycle of a familiar plant and animal.	**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, Part 3, pp. 23-30
LS1 (K-2)-4 **Students demonstrate an 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, Part 3, pp. 23-30 Science Stories, pp. 4-14, 23-24, 26-39
LS2 (K-2)-5 **Students demonstrate an understanding of energy flow in an ecosystem by …** **5a** caring for plants and/or animals by identifying and providing for their needs; experimenting with a plant's growth under different conditions, including light and no light.	**LS2 (K-4) – SAE–5** *Recognize that energy is needed for all organisms to stay alive and grow or identify where a plant or animal gets its energy.* Investigation 1, Part 2, pp. 13-22 Investigation 2, Science Extension, p. 30 Science Stories, pp. 3-7 Video: How Plants Get Food
LS4 (K-2)-8 **Students demonstrate an understanding of human body systems by …** **8a** identifying the five senses and using senses to identify objects in the environment. **8b** observing, identifying and recording external features of humans and other animals **8c** identifying the senses needed to meet survival needs for a given situation	**LS4 (K-4) – FAF–8**** *Identify what the physical structures of humans do (e.g., sense organs-eyes, ears, skin, etc.) or compare physical structures of humans to similar structures of animals*. Investigation 3, Parts 1-3, pp. 8-25 Investigation 1, Part 3, pp. 23-30 Science Stories, pp. 23, 27, 30, 35