Science Unit 1- Plan
Air and Weather

Unit Length:
14 Weeks

GRADE 1
AIR AND WEATHER

Table of Contents


Air and
Weather

UNIT OVERVIEW

Air and Weather

Summary

Air (gas) as matter and weather (the description of what is happening in the air around us on Earth) are explored in Unit 3: Weather and Seasons, FOSS® Air and Weather. By exploring the physical properties of air and wind, observing weather and examining weather data, students will become meteorologists, using tools to observe and collect weather data. The sequence of the activities provides opportunities for free exploration that will enhance and deepen understanding of student experiences involving more "formal" data collection and analysis. This perspective is addressed in the Overview: Science for Young Children, and Organizing the Classroom sections. Note also that this module uses both whole class and center activities. A FOSS "Center" investigation is supervised experience under the direction of an adult.

Unit Goals

Student will…

- Develop an interest in air and weather.
- Experience air as a material that takes up space and can be compressed into a smaller space.
- Observe the force of air pressure pushing on objects and materials.
- Observe and describe changes that occur in weather over time.
- Become familiar with instruments used by meteorologists to monitor air and weather conditions.
- Compare monthly and seasonal weather conditions using bar graphs.
- Observe the location of the Sun and the Moon in the sky over a day and the change in the appearance of the Moon over a month.
- Organize and communicate observations through drawing and writing.
- Acquire vocabulary associated with properties of air and weather conditions.

Unit Skills	
Knowledge:	***Skills:***
Student will Know…. • The weather and changing seasons impact organisms such as humans, plants, and other animals – and the environment. • Organisms and the environment are influenced by the weather and changing seasons. • Weather is the condition of the atmosphere (air) and changes over time. • Temperature, precipitation, and cloud types are components of the weather that can be described. • There are different kinds of clouds. • Rain is water that comes from clouds. • Wind is moving air. • Wind speed and wind direction are components of weather that can be described using anemometers and wind vanes. • Wind scales are tools used to describe the speed of the wind. • Weather conditions change over time. • Weather observations can be organized, compared, and predicted. • The Sun heats the Earth during the day. • Each season has a typical weather pattern that can be observed, compared, and predicted.	***Students will be able to…*** • Use evidence to develop a scientific explanation for how the weather and changing seasons impacts the organisms such as humans, plants, and other animals – and the environment • Analyze and interpret data such as temperatures in different locations (Sun or shade) at different times and seasons as evidence of how organisms and the environment are influenced by the weather and changing seasons • Analyze ways in which severe weather contributes to catastrophic events such as floods and forest fires • Ask testable questions about weather and the seasons. • Make predictions, share thinking, and ask others how they know that organisms and the environment are influenced by the weather and changing seasons. • Select and use appropriate tools to measure, record, and communicate data about the weather using appropriate units.
Evidence of Understanding:	
Diagnostic Assessment: Pre- Assessment **Authentic Assessment:** Notebook and Journal Entries **Participation:** Teacher Observation/Anecdotal Notes **Unit Assessment:** Post Test	***Assessment Data – Propagated to Genesis*** **Diagnostic Assessment**: Pre- Assessment **Authentic Assessment:** Notebook and Journal Entries **Unit Assessment:** Post Test

Preconception /Misconceptions
Air
List other that you discover in your class:
Air in only found in sky.
Bubbles in boiling water is made of air
Air does not have any weight
Weather
List other that you discover in your class:
Clouds are formed by vapor from kettles
Clouds are made of cotton, wool, or smoke.
Rain comes from clouds sweating
Rain occurs when clouds are shaken

Materials Sheet

Be aware that the classroom teacher or school site must supply a few items. Here is a summary of supplies not included in the kit.

FOSS® Module
Air and Weather
Packing List

DRAWER 1 - PERMANENT EQUIPMENT		
Quantity	**Item Description**	**Inventory Checklist**
2	Anemometer systems	☐
	(2 bases, 16 cups, 4 cardboard squares)	☐
4	Balloon pumps	☐
2	Class calendars, laminated	☐
80	Feathers	☐
2	Hole punches	☐
100	Paper clips, jumbo	☐
50	Plastic-foam balls	☐
1	Poster, *A Guide to the Sky*	☐
1	Poster, *FOSS Safety*	☐
1	Poster, *Natural Sources of Water*	☐
1	Poster, *Wind Scale*	☐
1	Rain gauge	☐
1	Thermometer, FOSS demonstration	☐
1	Thermometer, working	☐
20	Zip bags, 4-liter	☐
1	Teacher Guide	☐
1	Teacher Preparation Video: DVD	☐
*	*FOSS Science Stories: Air and Weather*	
	(1 big book and student books)	☐
DRAWER 1 - CONSUMABLE EQUIPMENT		
100	Balloons, oblong	☐
100	Balloons, round, 7"	☐
100	Cotton balls	☐
1 roll	Crepe-paper	☐
420	Dots, adhesive, 3/4" diameter	☐
1 roll	Duct tape	☐
1 roll	Fishing line	☐
100	Straws, flexible	☐
250	Straws, jumbo	☐
100	Straws, super jumbo	☐
2 balls	String	☐
4 rolls	Transparent tape	☐
75	Zip bags, 1-liter	☐

DRAWER 2 - PERMANENT EQUIPMENT		
Quantity	**Item Description**	**Inventory Checklist**
4	Basins	☐
16	Bottles, clear plastic, 120-mL	☐
40	Bubble wands, plastic	☐
18	Pipes, long, rigid plastic, 15 cm	☐
18	Pipes, short, rigid plastic, 7.5 cm	☐
18	Rubber stoppers, #3, 2-hole	☐
32	Syringes, 30-mL	☐
40 pcs.	Tubing, flexible plastic, 12.5 cm	☐
20	Vials, 12-dram	☐
DRAWER 2 - CONSUMABLE EQUIPMENT		
1 btl.	Food coloring, green	☐

Delta Education provides the following convenient options to help you replenish your FOSS kits:

- Use the *Replacement Parts List* included in this kit (or call 1-800-258-1302 to request a new one).
- Visit **www.deltaeducation.com** to download PDF Replacement Parts Lists for each Module or Course.
- Order selected items online at **www.deltaeducation.com.**

Refill Kits containing all consumable items are also available -- call for details!

FOSS®
FULL OPTION SCIENCE SYSTEM
Lawrence Hall of Science
University of California, Berkeley

Delta Education
...because children learn by doing.®

School Specialty Science

Standards

New Jersey Common Core Standards

5.1 Science Practices	All students will understand that science is both a body of knowledge and an evidence-based, model-building enterprise that continually extends, refines, and revises knowledge. The four Science Practices strands encompass the knowledge and reasoning skills that students must acquire to be proficient in science.
Strand A	**Understand Scientific Explanations: Students understand core concepts and principles of science and use measurement and observation tools to assist in categorizing, representing, and interpreting the natural and designed world. Who, what, when, where, why, and how questions form the basis for young learners' investigations during sensory explorations, experimentation, and focused inquiry**
5.1.4.A.1	Fundamental scientific concepts and principles and the links between them are more useful than discrete facts.
5.1.4.A.2	Outcomes of investigations are used to build and refine questions, models, and explanations.
Strand B	**Generate Scientific Evidence Through Active Investigations: Observations and investigations form young learners' understandings of science concepts.**
5.1.4.B.2	Tools and technology are used to gather, analyze, and communicate results.
5.1.4.B.3	Evidence is used to construct and defend arguments
5.1.4.B.4	Reasoning is used to support scientific conclusions.
Stand C	**Reflect on Scientific Knowledge: Interacting with peers and adults to share questions and explorations about the natural world builds young learners' scientific knowledge.**
5.1.4.C.1	Scientific understanding changes over time as new evidence and updated arguments emerge.
5.1.4.C.2	Revisions of predictions and explanations occur when new arguments emerge that account more completely for available evidence.
Strand D	**Participate Productively in Science: Science practices include drawing or "writing" on observation clipboards, making rubbings, or charting the growth of plants.**
5.1.4.D.1	Science has unique norms for participation. These include adopting a critical stance, demonstrating a willingness to ask questions and seek help, and developing a sense of trust and skepticism.
5.1.4.D.2	In order to determine which arguments and explanations are most persuasive, communities of learners work collaboratively to pose, refine, and evaluate questions, investigations, models, and theories (e.g., scientific argumentation and representation).
5.1.4.D.3	Instruments of measurement can be used to safely gather accurate information for making scientific comparisons of objects and events.
5.2 Earth Science	All students will understand that Earth operates as a set of complex, dynamic, and interconnected systems, and is a part of the all-encompassing system of the universe.
Strand F	Climate and Weather: Earth's weather and climate systems are the result of complex interactions between land, ocean, ice, and atmosphere.
5.4.2.F.1	Current weather conditions include air movement, clouds, and precipitation. Weather conditions affect our daily lives.
5.4.4.F.1	Weather changes that occur from day to day and across the seasons can be measured and documented using basic instruments such as a thermometer, wind vane, anemometer, and rain gauge.

Next Generation Science Standards

Performance Expectations
K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time. [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.] [Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.] **1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year**. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.]
Science and Engineering Practices
Analyzing and Interpreting Data • Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. • Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-ESS2-1) **Planning and Carrying Out Investigations** • Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. • Make observations (firsthand or from media) to collect data that can be used to make comparisons. (1-ESS1-2)
Disciplinary Core Ideas
ESS2.D: Weather and Climate Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K-ESS2-1) **ESS1.B: Earth and the Solar System** Seasonal patterns of sunrise and sunset can be observed, described, and predicted. (1-ESS1-2)
Crosscutting Concepts
Patterns Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (K-ESS2-1)

Common Core State Standards

CCSS: English Language Arts	
Reading Informational Text	
2.RI.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
2.RI.3	Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
2.RI.4	Determine the meaning of words and phrases in a text relevant to a grade 1 topic or subject area.
CCSS: Writing-	
2.W.1	Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.
AZ.2.W.4	With guidance and support from adults, produce functional writing (e.g., friendly letters, recipes experiments, notes/messages, labels, graphs/tables, directions, posters) in which the development and organization are appropriate to task and purpose.
2.W.7	Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).
2.W.2	Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.
2.W.3	) Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.
CCSS: Speaking and Listening:	
SL.K.3	Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
CCSS: Mathematics	
MP.2	Reason abstractly and quantitatively. (K-ESS2-1)
MP.4	Model with mathematics. (K-ESS2-1),(K-ESS3-2)
K.CC.A	Know number names and the count sequence. (K-ESS2-1)
K.MD.A.1	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1)
K.MD.B.3	Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)

Before beginning unit administer pretest.

Check that all materials are available, usable, and ready

Investigation 1

"Exploring Air"

Summary

Students explore properties of a common gas mixture—air. Using vials, syringes, and tubing, students experience air as matter, discovering that it takes up space and can be compressed, and that compressed air builds up pressure that can push objects around. They construct and compare parachutes and balloon rockets that use air.

Disciplinary Core Idea	**S & E Practice**	***CC Concept***
ESS2.D: Weather and Climate • Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K-ESS2-1)	**Analyzing and Interpreting Data** • Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. • Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-ESS2-1)	**Patterns** • Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Core Conceptual Understanding

- Air is a gas and is all around us.
- Air is matter and takes up space.
- Air makes objects move.
- Air moves from place to place. Moving air is wind.
- Air resistance affects how things move.
- Air can be compressed.
- The pressure from compressed air can move things, including water.

New Vocabulary

Air, air resistance, barrel, blow, bubble, compress, distance, gas, matter, move, parachute, plunger, pressure, push, rocket, submerge, syringe, system, tube, wind

Body of Evidence

Assessments	***Assessments Data –Propagated to Genesis***
(Must be scored in Genesis) Pretest – No grade in Genesis **Embedded Assessment** Science Notebook Entry (minimum 5) Student Response Sheets 2-7, 8 Teacher Observation/ Anecdotal Notes Assessments Duplications 1,2,3	Pre Assessment – no grade Notebook Investigation Entry

Investigation 1 Part 1 - "Air is There"

Summary

Students work with a set of objects to see how objects can be moved by and through air. Students observe the properties of air as it interacts with other materials.

Focus Questions

How does air interact with objects?

Teacher Preparation	Investigation/Activity	Time
Lab Lesson 1 Send Letter to Parents Home (Teacher Master) • Note: A Pre-assessment is included in this Investigation. See Inv.1 Exploring Air, Part 1: Air is There, p. 9, Step 3 and p. 12, Step 6. • Teacher Guide Inv. 1: Exploring Air, pp. 1-7 • Teacher Guide Inv. 1: Exploring Air, Part 1: Air is There, Materials and Getting Ready, pp. 8-10. • Teacher Guide, Assessment Folio, pp. 1-12 • Kit preparation: see Teacher Guide, Materials, pp. 1-10 and Teacher Preparation Video or DVD (or view at www.fossweb.com • Note: see Teacher Guide, Materials, p. 4-5 for Materials Supplied by the Teacher • Gather materials as noted above for Investigations 1, 3, and 4. • Review the Overview folio of the Teacher Guide taking special note of pp. 3-6: Science Background; pp. 8-9: Science for Young Children pp. 10-11: Organizing the Classroom; p. 17: Safety in the Classroom; p.18: Air and Weather Matrix • Consider Science Notebooks: Download the FOSS Science Notebooks folio at www.fossweb.com • Make copies for student notebooks. • www.fossweb.com – Check website for interactive simulations, Audio Stories, to write questions to a scientist, for teaching tips, and other websites to support teaching Air and Weather. Lab Lesson 2 • Teacher Guide Inv. 1: Exploring Air, pp. 1-7 • Teacher Guide Inv. 1: Exploring Air, Part 1: Air is There, Materials and Getting Ready pp. 8-10	Lab Lesson 1 • Investigation 1: Exploring Air: Part 1: Air is There, pp. 11-12, Steps 1-5 • Investigation Duplication Master: Teacher Sheet No. 1 (Letter to Parents) • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist • Notebook. 1. Investigation Duplication Masters: Student Sheets No. 2-7; or 2. "Black Marble" or other student notebook. Have students record independently or attach in Investigation Duplication Masters sheets as desired. ***Note:*** The Focus Question: "How does air interact with objects?" may be used for student notebook entries. ***Note:*** The Letter to Parents in your Teacher Guide informs parents and caregivers about upcoming experiences for students. Two resources found on fossweb.com will help you connect parents and caregivers to student learning. *Log on to www.fossweb.com: Go to Grade 1, click on Air and Weather. Click on "Teacher/Parent Info": 1. Download the "FOSS® at Home" Folio. 2. Download the "Home School Connection" PDF file.* Lab Lesson 2 • Investigation 1: Exploring Air: Part 1: Air is There, pp. 11-12, Steps 6-9 • Investigation Duplication Master: Teacher Sheet No. 1 (Letter to Parents) • Assessment Duplication Masters No. 1, 2, 3: • Anecdotal Notes and Assessment Checklist ***Note:*** The Focus Question: "How does air interact with objects?" may be used for student notebook entries.	Week 1 2 Lab

Homework/Center Activities/Extra Practices

- Parent Letter (send home)
- Spelling City (vocab.)
- FOSS Digital Resources: eBook, Audio Stories
- Suggested websites
- Word wall activities
- Cross Curriculum Extensions
- Informational Text –Reading

Additional Activities/Lesson(s)

Discussion, Notebook, Informational Reading, Focused Center Actives, Extensions, etc.

Investigation 1 Part.2 –Air Under Water

Summary

Students use vials, paper towels, and basins to explore the idea that air takes up space.

Focus Questions

1. How can I keep a paper towel dry underwater?

Teacher Preparation	Investigation/Activity	Time
Lab Lesson 3 • Teacher Guide Inv. 1: Exploring Air, pp. 1-7 • Teacher Guide Inv. 1: Exploring Air, Part 2: Air Under Water, Materials and Getting Ready, pp. 13-14 Lab Lesson 4 • Teacher Guide Inv. 1: Exploring Air, pp. 1-7 • Teacher Guide Inv. 1: Exploring Air, Part 2: Air Under Water, Materials and Getting Ready, pp. 13-14 – • www.fossweb.com Check website for interactive simulations, Audio Stories, to write questions to a scientist, for teaching tips, and other websites to support teaching Air and Weather.	Lab Lesson 3 • Investigation 1: Exploring Air: Part 2: Air Under Water, pp. 15-16, Steps 1-9 • Investigation Duplication Master: Teacher Sheet No. 8 • Investigation Duplication Master: Air and Weather Journal, pp. 1-3 • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist **Note:** The Focus Question: "How can I keep a paper towel dry underwater?" may be used for student notebook entries. **(Rotate half the class through the center.)** Lab Lesson 4 • Investigation 1: Exploring Air: Part 2: Air Under Water, pp. 15-16, Steps 1-9 and 10, 11 • Investigation Duplication Master: Teacher Sheet No. 8 • Investigation Duplication Master: Air and Weather Journal, pp. 1-3 • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist ***Note:*** The Focus Question: "How can I keep a paper towel dry underwater?" may be used for student notebook entries. **(Rotate the remainder of the class through the center. Conduct the Wrap-Up)**	Week 2 2 Lab

Homework/Center Activities/Extra Practices

- Math Extension 1A, Student Sheet 33
- Spelling City(vocab.)
- FOSS Digital Resources: eBook, Audio Stories
- Suggested websites
- Word wall activities
- Cross Curriculum Extensions
- Informational Text –Reading

Additional Activities/Lesson(s)

Discussion, Notebook, Informational Reading, Focused Center Actives, Extensions, etc.

Investigation 1 Part 3 and 4 – Parachutes and Pushing on Air

Summary

Students construct and observe parachutes dropping through air. They think about how air slows the descent of the parachute. Students use syringes to investigate air. They discover that air can be compressed and that air under pressure can push objects around.

Focus Questions

1. How does a parachute work?
2. How does air affect how a parachute floats to the ground?

Teacher Preparation	Investigation/Activity	Time
Lab Lesson 5 • Teacher Guide Inv. 1: Exploring Air, pp. 1-7 • Teacher Guide Inv. 1: Exploring Air, Part 3: Parachutes, Materials and Getting Ready, pp. 17-18 Lab Lesson 6 • Teacher Guide Inv. 1: Exploring Air, pp. 1-7 • Teacher Guide Inv. 1: Exploring Air, Part 4: Pushing on Air, Materials and Getting Ready, pp. 21-22	Lab Lesson 5 • Investigation 1: Exploring Air: Part 3: Parachutes, pp. 19-20, Steps 1-9 • Investigation Duplication Master: Air and Weather Journal, pp. 4 • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist **Note:** The Focus Question "How does a parachute work?" "How does air affect how a parachute floats to the ground?" may be used for student notebook entries. Lab Lesson 6 • Investigation 1: Exploring Air: Part 4: Pushing on Air, pp. 23-26, Steps 1-15 • Investigation Duplication Master: Air and Weather Journal, pp. 5-6 • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist **Note:** The Focus Question: "What happens when I push air into a smaller space?" may be used for student notebook entries.	Week 3 2 Lab

Homework/Center Activities/Extra Practices

- Home/School Connection, Student Sheet No. 41
- Spelling City(vocab.);
- FOSS Digital Resources: eBook, Audio Stories
- Suggested websites
- Word wall activities
- Cross Curriculum Extensions
- Informational Text –Reading

Additional Activities/

Discussion, Notebook, Informational Reading, Focused Center Actives, Extensions, etc.

Investigation 1 Part 5 Air and Weather Fountain & Part 6 Balloon Rockets

Summary

Students put together tubes, a bottle, water, a rubber stopper, and two syringes to create a system. They add water and use air pressure to push the water around the system. Students set up a balloon-rocket system and find out how far the air in the balloon will propel the system along a flight line.

Focus Question

1. How can I use air to push water around a system?

Teacher Preparation	Investigation/Activity	Time
Lab Lesson 8 • Teacher Guide Inv. 1: Exploring Air, pp. 1-7 • Teacher Guide Inv. 1: Exploring Air, Part 5: Air and Water Fountain, Materials and Getting Ready, pp. 27-29 • www.fossweb.com Check website for interactive simulations, Audio Stories, to write questions to a scientist, for teaching tips, and other websites to support teaching Air and Weather. Lab Lesson 9 • Teacher Guide Inv. 1: Exploring Air, pp. 1-7 • Teacher Guide Inv. 1: Exploring Air, Part 6: Balloon Rockets, Materials and Getting Ready, pp. 34-35 • Teacher Guide Science Stories folio, pp. 1-3 **Advance Teacher Prep for Investigation 2** Prepare to "Create Meteorologist Tool Kits." See Investigation 2: Observing Weather, p. 28: Interdisciplinary Extensions, Language Extensions: • Prepare book cover and pocket pages • Copy Investigation Duplication Masters Nos. 12, 14, 15, 16, 17, 23	Lab Lesson 8 • Investigation 1: Exploring Air: Part 5: Air and Water Fountain, pp. 30-33, Steps 1-16 • Investigation Duplication Master: Air and Weather Journal There is no journal page for this investigation. You may wish to create your own, or make a class poster. • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist ***Note:*** The Focus Question "How can I use air to push water around a system?" may be used for student notebook entries. Lab Lesson 9 • Investigation 1: Exploring Air: Part 6: Balloon Rockets, pp. 36-38, Steps 1-10 • Investigation Duplication Master: Air and Weather Journal There is no journal page for this investigation. You may wish to create your own, or make a class poster. • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist **Note:** The Focus Question: "How can I use air to push water around a system?" may be used for student notebook entries. **Read Science Stories:** pp. 3-6, What is All around Us? For link to the Air and Weather Science Stories Audio Stories, log on to www.fossweb.com : Go to Grade 1, click on Air and Weather. Click on "Media"; click on Audio Stories	Week 4 2 Lab

Homework/Center Activities/Extra Practices

- Math Extension 1B. Student Sheet #34
- Spelling City(vocab.);
- FOSS Digital Resources: eBook, Audio Stories
- Suggested websites
- Word wall activities
- Cross Curriculum Extensions
- Informational Text –Reading

Additional Activities

Discussion, Notebook, Informational Reading, Focused Center Actives, Extensions, etc.

Investigation 2

"Exploring Air"

Summary

Students use instruments to observe and record weather over 4–8 weeks on a class calendar and in science notebooks. Students monitor temperature with a thermometer and rainfall with a rain gauge. They learn to identify three basic cloud types by matching their observations with a cloud chart.

Disciplinary Core Idea	**S & E Practice**	***CC Concept***
ESS2.D: Weather and Climate • Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K-ESS2-1)	**Analyzing and Interpreting Data** • Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. • Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-ESS2-1)	**Patterns** • Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Core Conceptual Understanding

- Weather describes conditions in the air outside.
- Meteorologists study the weather.
- Temperature is measured with a thermometer.
- Clouds are made of liquid water drops that fall to Earth as rain. Wind moves clouds in the sky.
- Rain gauges measure the amount of rain or snow.
- Natural sources of water include streams, rivers, lakes (fresh water), and the ocean (salt water).

New Vocabulary

Cirrus, Cloud, Cold, Cool, Cumulus, Degrees Celsius, Degrees Fahrenheit, Freezing, Hot, Meteorologist, Monitor, Overcast, Partly cloudy, Rain gauge, Rainy, Snowy, Stratus, Sunny, Symbol, Temperature, Thermometer, Tool, Warm, Weather, Weather Instrument

Body of Evidence

Embedded Assessment	***Assessments Data –Propagated to Genesis***
Science Notebook Entry (minimum 4) Journal Entries pg. 7,8 Student Response Sheets 10,11,12,13,14 Teacher Observation/ Anecdotal Notes Assessments Duplications 1,2,3	Notebook

Investigation 2 Part 1: Weather Calendar

Summary

The class shares what they know about weather and how it relates to air. A class meteorologist begins recording daily weather observations on a class calendar. Symbols are used to indicate five basic types of weather

Focus Questions

- What is the weather today?
- What does a thermometer tell us about the weather?
- What types of clouds are in the sky today?
- Where does rain come from, and where does it go?

Teacher Preparation	Investigation/Activity	Time
Lab Lesson 9 • Teacher Guide Inv. 2: Observing Weather, pp. 1-7 • Teacher Guide Inv. 2: Observing Weather, Part 1: Weather Calendars, Materials and Getting Ready, pp. 8-10 • www.fossweb.com Check website for interactive simulations, Audio Stories, to write questions to a scientist, for teaching tips, and other websites to support teaching Air and Weather. Lab Lesson 10 • Teacher Guide Inv. 2: Observing Weather, pp. 1-7 • Teacher Guide Inv. 2: Observing Weather, Part 1: Weather Calendars, Materials and Getting Ready, pp. 8-10	Lab Lesson 9 • Investigation 2: Observing Weather: Part 1: Weather Calendars, pp. 11-13, Steps 1-7 • Investigation Duplication Master: Teacher Sheet No. 9 – Investigation Duplication Master: Air and Weather Journal, p. 7 • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist ***Note:*** The Focus Question "How can we keep a record of daily weather conditions?" may be used for student notebook entries. Lab Lesson 10 • Investigation 2: Observing Weather: Part 1: Weather Calendars, pp. 11-13, Steps 8-13 • Investigation Duplication Master: Teacher Sheet No. 9 • Investigation Duplication Master: Air and Weather Journal, p. 7 • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist *Note:* The Focus Question "How can we keep a record of daily weather conditions?" may be used for student notebook entries.	Week 6 2 Lab Lessons

Homework/Center Activities/Extra Practices

- Spelling City(vocab.)
- FOSS Digital Resources: eBook, Audio Stories
- Suggested websites
- Word wall activities
- Cross Curriculum Extensions
- Informational Text –Reading

Additional Activities

Discussion, Notebook, Informational Reading, Focused Center Actives, Extensions, etc.

Investigation 2 Part 2: Measuring Temperature & Part 3: Watching Clouds

Summary

Students learn to use a thermometer and take turns measuring and recording the temperature. They construct a model thermometer and practice reading various temperatures. Students observe and compare several types of clouds and discuss how they move across the sky. They read FOSS Science Stories to find out more about what meteorologists do.

Focus Questions

1. How does a thermometer work to measure the temperature?

Teacher Preparation	Investigation/Activity	Time
Lab Lesson 11 • Teacher Guide Inv. 2: Observing Weather, pp. 1-7 • Teacher Guide Inv. 2: Observing Weather, Part 2: Measuring Temperature, Materials and Getting Ready, pp. 14-16 Lab Lesson 12 • Teacher Guide Inv. 2: Observing Weather, pp. 1-7 • Teacher Guide Inv. 2: Observing Weather, Part 3: Watching Clouds, Materials and Getting Ready, pp. 20-21. • Teacher Guide Science Stories folio, pp. 4-5	Lab Lesson 11 • Investigation 2: Observing Weather: Part 2: Measuring Temperature, pp. 17-19, Steps 1-12 • Investigation Duplication Master: Student Sheet No. 10 or 11 • Investigation Duplication Master: Student Sheet No. 14 • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist ***Note:*** The Focus Question "How does a thermometer work to measure the temperature?" may be used for student notebook entries. Lab Lesson 12 • Investigation 2: Observing Weather: Part 3: Watching Clouds, pp. 22-23, Steps 1-6 – Investigation Duplication Master: Student Sheet No. 12 • Investigation Duplication Master: Student Sheet No. 14 • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist ***Note:*** The Focus Question "How does a thermometer work to measure the temperature?" may be used for student notebook entries. **Read Science Stories**: pp. 7-13, What's the Weather Today? For link to the Air and Weather Science Stories Audio Stories log on to www.fossweb.com/nyc: Go to Grade 1, click on Air and Weather. Click on "Media"; click on Audio Stories.	Week 7 2 Lab Lessons

Homework/Center Activities/Extra Practices

- Math Extension 2A, Student Sheet# 35
- Math Extension 2B, Student Sheet #36
- Spelling City(vocab.)
- FOSS Digital Resources: eBook, Audio Stories
- Suggested websites
- Word wall activities
- Cross Curriculum Extensions
- Informational Text –Reading

Additional Activities
Discussion, Notebook, Informational Reading, Focused Center Actives, Extensions, etc.

Investigation 2 Part 4: Measuring Rain		
Summary Students observe and compare several types of clouds and discuss how they move across the sky. They read FOSS Science Stories to find out more about what meteorologists do.		
Focus Question		
Teacher Preparation	**Investigation/Activity**	**Time**
Lab Lesson 13 • Teacher Guide Inv. 2: Observing Weather, pp. 1-7 • Teacher Guide Inv. 2: Observing Weather, Part 4: Measuring Rain, Materials and Getting Ready, pp. 24-25	Lab Lesson 13 • Investigation 2: Observing Weather: Part 4: Measuring Rain, pp. 26-27, Steps 1-4 • Investigation Duplication Master: Teacher Sheet No. 13 • Investigation Duplication Master: Air and Weather Journal, p. 8 • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist **Note:** The Focus Question "How does a thermometer work to measure the temperature?" may be used for student notebook entries.	Week 8 2 Lab Lessons

Homework/Center Activities/Extra Practices	
• Teacher Sheet No. 13 "Make a Rain Gauge" can be sent home if you think students would like to make one of their own • Home Connection, Student Sheet #42 • Spelling City(vocab.) • FOSS Digital Resources: eBook, Audio Stories	• Suggested websites • Word wall activities • Cross Curriculum Extensions • Informational Text –Reading

Additional Activities
Discussion, Notebook, Informational Reading, Focused Center Actives, Extensions, etc.

Investigation 3

"Wind Exploration"

Summary

Students look for evidence of moving air. They observe and describe wind speed using pinwheels, an anemometer, and a wind scale. They observe bubbles and construct wind vanes to find the wind's direction. Flying kites, they feel the strength of the wind and the direction it is moving.

Disciplinary Core Idea	**S & E Practice**	***CC Concept***
ESS2.D: Weather and Climate • Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K-ESS2-1)	**Analyzing and Interpreting Data** • Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. • Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-ESS2-1)	**Patterns** • Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Core Conceptual Understanding

- Wind is moving Air
- Bubbles can show the changing direction and speed of the wind.
- Wind speed and wind direction are components of weather that can be described using anemometers and wind vanes
- Meteorologists use a wind scale to describe wind strength, anemometers to measure wind speed, and a wind vane to indicate wind direction.
- Wind scales are tools used to describe the speed of the wind.
- A wind vane points in the direction the wind is coming from.
- Wind lifts kites up into the sky

New Vocabulary

Anemometer, Bubble, Calm, Direction, East, Flying line, Gentle breeze, Kite, Moderate breeze, North, Pinwheel, South, Strong breeze, Tail, West, Wind, Wind vane

Body of Evidence

Embedded Assessment	***Assessments Data –Propagated to Genesis***
Science Notebook Entry (minimum 2) Journal Entries pg. 9,10 Student Response Sheets 14,17,19,21,22,23 Teacher Observation/ Anecdotal Notes Assessments Duplications 1,2,3 **Benchmark Assessment**	

Investigation 3 - Part 1 Bubbles in the Wind
Investigation 3 - Part 2: Wind Speed

Summary

In Part 1 the students use bubble wands to blow bubbles outside. They investigate how the air moves bubbles in a variety of locations around the school building. For part 2, the students go outside to feel and observe the wind. They are introduced to a descriptive wind scale (an adaptation of the Beaufort scale) and an anemometer, a tool used by scientists to more accurately measure the speed of the wind.

Focus Question

- How can bubbles be used to observe the wind?
- How do people describe the strength of the wind?

Teacher Preparation	Investigation/Activity	Time
Lab Lesson 14 • Teacher Guide Inv. 3: Observing Weather, pp. 1-7 • Teacher Guide Inv. 3: Wind Explorations, Part 1: Bubbles in the Wind, Materials and Getting Ready, pp. 8-9 • Consider Science Notebooks: Download the FOSS Science Notebooks folio at www.fossweb.com • www.fossweb.com Check website for interactive simulations, Audio Stories, to write questions to a scientist, for teaching tips, and other websites to support teaching Air and Weather Lab Lesson 15 • Teacher Guide Inv. 3: Observing Weather, pp. 1-7 • Teacher Guide Inv. 3: Wind Explorations, Part 2: Wind Speed, Materials and Getting Ready, pp. 12-13 • Teacher Guide Science Stories folio ***Advance Preparations*** Look ahead to Inv. 3 Part 5 to prepare copies and cut materials for student kites	Lesson 14 • Investigation 3: Observing Weather: Part 1: Bubbles in the Wind, pp. 10-11, Steps 1-8 • Investigation Duplication Master: Air and Weather Journal There is no journal page for this investigation. You may wish to create your own or take photos for students to put in their notebooks. • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist Note: The Focus Question "How can bubbles be used to find out about wind speed and direction?" may be used for student notebook entries. Lab Lesson 15 • Investigation 3: Observing Weather: Part 2: Wind Speed, pp. 14-15, Steps 1-8 • Investigation Duplication Master: Teacher Sheet No. 18 • Investigation Duplication Master: Student Sheet No. 14 • Investigation Duplication Master: Student Sheets Nos. 17, 23 • Investigation Duplication Master: Air and Weather Journal, p. 9 • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist ***Note:*** The Focus Question "How do people describe the strength of the wind?" may be used for student notebook entries.	*Week 9* *2 Lab Lessons*

Homework/Center Activities/Extra Practices

- Home School Connection, Student Sheet No. 43
- Spelling City(vocab.);
- FOSS Digital Resources: eBook, Audio Stories
- Suggested websites
- Word wall activities
- Cross Curriculum Extensions
- Informational Text –Reading

Additional Activities

Discussion, Notebook, Informational Reading, Focused Center Actives, Extensions, etc.

Investigation 3 Part 3 Pinwheels

Summary

Students construct a pinwheel and observe how it operates when they blow on it, move it through air, and hold it in front of a fan. They compare the action of the pinwheels to the class anemometer.

Focus Questions

How can we use pinwheels to observe wind speed?

Teacher Preparation	Investigation/Activity	Est. Time
Lesson 16 • Teacher Guide Inv. 3: Observing Weather, pp. 1-7 • Teacher Guide Inv. 3: Wind Explorations, Part 3: Pinwheels, Materials and Getting Ready, pp. 17-18	Lesson 16 • Investigation 3: Observing Weather: Part 3: Pinwheels, pp. 19-21, Steps 1-10 • Investigation Duplication Master: Student Sheet No. 19 • Investigation Duplication Master: Air and Weather Journal There is no journal page for this investigation. You may wish to create your own or take photos for students to put in their notebooks. • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist Note: The Focus Question "How can we use pinwheels to observe wind speed?" may be used for student notebook entries.	Week 10 1 Lessons

Homework/Center Activities/Extra Practices

- Math Extension 3A – Student Sheet No. 37
- Spelling City(vocab.);
- FOSS Digital Resources: eBook, Audio Stories
- Suggested websites
- Word wall activities
- Cross Curriculum Extensions
- Informational Text –Reading

Additional Activities

Science Extension, p. 35: Consider a Kite Festival

Discussion, Notebook, Informational Reading, Focused Center Actives, Extensions, etc.

Investigation 3 Part 4 Wind Vanes

Summary

Students learn about wind vanes, a tool to determine wind direction. They compare the movement of the wind vane to those of bubbles and clouds.

Focus Questions

How can we use a wind vane to observe the direction of the wind?

Teacher Preparation	Investigation/Activity	Time
Lab Lesson • Teacher Guide Inv. 3: Observing Weather, pp. 1-7 • Teacher Guide Inv. 3: Wind Explorations, Part 4: Wind Vanes, Materials and Getting Ready, pp. 22-24 • Teacher Guide Science Stories folio, pp. 6-7 ********** Lab Lesson • Teacher Guide Inv. 3: Observing Weather, pp. 1-7 • Teacher Guide Inv. 3: Wind Explorations, Part 4: Wind Vanes, Materials and Getting Ready, pp. 22-24 • Teacher Guide Science Stories folio, pp. 6-7	Lab Lesson • Investigation 3: Observing Weather: Part 4: Wind Vanes, pp. 25-27, Steps 1-7 • Investigation Duplication Master: Teacher Sheet No. 20 • Investigation Duplication Master: Student Sheet No. 14 • Investigation Duplication Master: Air and Weather Journal, p. 10 • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist ***Note:*** The Focus Question "How can we use a wind vane to observe the direction of the wind?" may be used for student notebook entries. --- Lab Lesson • Investigation 3: Observing Weather: Part 4: Wind Vanes, pp. 25-27, Steps 8-11 • Investigation Duplication Master: Teacher Sheet No. 20 – Investigation Duplication Master: Student Sheet No. 14 • Investigation Duplication Master: Air and Weather Journal, p. 10 • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist ***Note:*** The Focus Question "How can we use a wind vane to observe the direction of the wind?" may be used for student notebook entries. **Read Science Stories:** pp. 14-17, Understanding the Weather For link to the Air and Weather Science Stories Audio Stories log on to www.fossweb.com/nyc: Go to Grade 1, click on Air and Weather. Click on "Media"; click on Audio Stories.	Week 11 2 Lessons

Homework/Center Activities/Extra Practices

- Spelling City(vocab.);
- FOSS Digital Resources: eBook, Audio Stories
- Suggested websites
- Word wall activities
- Cross Curriculum Extensions
- Informational Text –Reading

Additional Activities
Science Extension, p. 35: Consider a Kite Festival

Investigation 3 Part 5 Kites		
Summary		
Students construct kites. They use the anemometer and wind vane to help them determine the best location and direction for flying kites.		
Focus Question		
How can we use weather instruments to improve kite flying?		
Teacher Preparation	**Body Of Evidence**	**Time**
Lab Lesson • Teacher Guide Inv. 3: Observing Weather, pp. 1-7 • Teacher Guide Inv. 3: Wind Explorations, Part 5: Kites, Materials and Getting Ready, pp. 28-29	*Lab Lesson* • Investigation 3: Observing Weather: Part 5: Kites, pp. 30-33, Steps 1-12 • Investigation Duplication Master: Student Sheets Nos. 21, 22 • Investigation Duplication Master: Air and Weather Journal There is no journal page for this investigation. You may wish to create your own or take photos for students to put in their notebooks. • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist ***Note:*** The Focus Question "How can we use weather instruments to improve kite flying?" may be used for student notebook entries.	Week 12

Homework/Center Activities/Extra Practices	
• Math Extension 3B Student Sheet No. 38 • Spelling City(vocab); • FOSS Digital Resources: eBook, Audio Stories • Suggested websites	• Word wall activities • Cross Curriculum Extensions • Informational Text –Reading
Additional Activities	
Discussion, Notebook, Informational Reading, Focused Center Actives, Extensions, etc.	

Investigation 4

"Wind Exploration"

Summary

Students organize monthly weather data, using graphs to describe weather trends. They continue to monitor weather throughout the year, to compare the seasons and look for weather patterns. At home, they make observations of the night sky, looking for observable changes in weather conditions as well as in objects in the sky (the Sun, the Moon, and the stars). Students are introduced to the changing location of the Sun in the sky and the changing appearance of the Moon.

Disciplinary Core Idea	**S & E Practice**	***CC Concept***
ESS2.D: Weather and Climate • Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K-ESS2-1)	**Analyzing and Interpreting Data** • Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. • Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-ESS2-1)	**Patterns** • Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Core Conceptual Understanding

- The Moon can be seen sometimes at night and sometimes during the day. It looks different every day, but looks the same again about every 4 weeks.
- There are more stars in the sky than anyone can easily count.
- The Sun and Moon can be observed moving across the sky; we see them at different locations in the sky, depending on the time of day or night.
- Each season has a typical weather pattern that can be observed, compared, and predicted.
- The Sun heats Earth during the day.
- The weather affects animals and plants.

New Vocabulary

Change, Column, Graph, Moon, Precipitation, Row, Season, Star, Sun, Total

Body of Evidence

Embedded Assessment	***Assessments Data –Propagated to Genesis***
Science Notebook Entry (minimum 2) Journal Entry pg. 11 Student Response Sheet 25 Teacher Observation/ Anecdotal Notes Assessments Duplication 1,2,3 **Benchmark Assessment** End of Module Assessment	End of Module Assessment

Investigation 4 Part 1: Weather Graphs

Summary

Students organize and graph the class weather data recorded over a period of 4 weeks. The class will continue recording the weather on the calendar and graph the following month.

Focus Question

- How can we compare the number of days of different kinds of weather?
- What does the Moon look like at different times during a month?
- What are the local weather patterns over a year?

Teacher Preparation	Body Of Evidence	Time
Lab Lesson • Teacher Guide Inv. 4: Looking for Change, pp. 1-7 • Teacher Guide Inv. 4: Looking for Change, Part 1: Weather Graphs, Materials and Getting Ready, pp. 8-9 • www.fossweb.com Check website for interactive simulations, Audio Stories, to write questions to a scientist, for teaching tips, and other websites to support teaching Air and Weather.	Lab Lesson • Investigation 4: Looking for Change: Part 1: Weather Graphs, pp. 10-11, Steps 1-7 Investigation Duplication Master: Teacher Sheet No. 24 • Investigation Duplication Master: Student Sheet No. 25 • Investigation Duplication Master: Air and Weather Journal. There is no journal page for this investigation. • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist **Note:** The Focus Question "How can we organize weather data collected for a month to look for change?" may be used for student notebook entries.	Week 13

Homework/Center Activities/Extra Practices

- Math Extension 4A, Student Sheet #39
- Spelling City(vocab.);
- FOSS Digital Resources: eBook, Audio Stories
- Suggested websites
- Word wall activities
- Cross Curriculum Extensions
- Informational Text –Reading

Additional Activities

1st 4-week weather observation (October) Look for Fall Weather Patterns

Investigation 4: Part 2. The Night Sky		
Summary		
The class moves from recording weather data on a calendar to creating seasonal graphs of the weather, temperature, and precipitation. Each season, new graphs are created and compared with the preceding seasons.		
Focus Question		
How can we organize weather data taken over different seasons to look for change?		
Teacher Preparation	**Body Of Evidence**	**Time**
Lab Lesson • Teacher Guide Inv. 4: Looking for Change, pp. 1-7 • Teacher Guide Inv. 4: Looking for Change, Part 2: Comparing the Seasons, Materials and Getting Ready, pp. 12-15 • Teacher Guide Science Stories folio, pp. 8-9 *Lab Lesson*	*Lab Lesson* • Investigation 4: Looking for Change: Part 2: Comparing the Seasons, pp. 16-18, Steps 1-4 • Investigation Duplication Master: Teacher Sheets Nos. 26, 27, 28 • Investigation Duplication Master: Student Sheet No. 25 • Investigation Duplication Master: Air and Weather Journal, p. 11 • Assessment Duplication Masters Nos. 1, 2, 3: Anecdotal Notes and Assessment Checklist ***Note:*** The Focus Question "How can we organize weather data taken over different seasons to look for change?" may be used for student notebook entries.	Week 14 2 Lab
Homework/Center Activities/Extra Practices		
• Math Extension 4B Student Sheet No.# 38 • Home School Connection 4, Student Sheet No. 44 • Spelling City(vocab.); • FOSS Digital Resources: eBook, Audio Stories • Suggested websites • Word wall activities • Cross Curriculum Extensions • Informational Text –Reading		
Additional Activities		

Unit ends. The Unit takes an estimated 32 Lab Lesson and there are 36 Lab Lessons scheduled. (4 additional science days built in)

Lab Lesson = 45 minutes

UNIT RESOURCES

Content books-

- FOSS Student Book with Unit
- See Reading Extensions in TE
- FOSS Reading Supplemental Books
- Water Series

FOSS Website:
www.fossweb.com (additional resources and web sites found there)

Spelling City:
www.spellingcity.com

United Streaming Videos
http://www.discoveryeducation.com//?ref=streaming&returnUrl=http%3A%2F%2Fstreaming%2Ediscoveryeducation%2Ecom%2Findex%2Ecfm

Brainpop (see if your school has license for this)
http://www.brainpopjr.com/