Unit 1: Air and Weather

Content Area: **Science**
Course(s):
Time Period: **Trimester 1**
Length: **10-12 weeks**
Status: **Published**

Summary

Students investigate the anchor phenomena that air surrounds us and the natural objects that we see in the sky. Students explore the phenomenon that objects in the sky change position in predictable ways. They explore the natural world by using simple instruments and calendars to observe and monitor change. They use new tools and methods to build on their understanding of the weather and to find out about properties of air by exploring how objects interact with air. Students observe daily changes in air temperature and connect them to the daily movement of the Sun in the sky. They monitor changes in hours of daylight over the seasons and connect them to changing weather conditions. Also they will identify the Moon in the day and night skies and monitor its movement over the month.

Revision Date: July 2020

Standards

9.4.2.CI	Creativity and Innovation
K-2-ETS1-1	Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.
9.4.2.CT	Critical Thinking and Problem-solving
K-2-ETS1-2	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
LA.RI.1.1	Ask and answer questions about key details in a text.
LA.RI.1.2	Identify the main topic and retell key details of a text.
K-2-ETS1-3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
LA.RI.1.3	Describe the connection between two individuals, events, ideas, or pieces of information in a text.
LA.RI.1.4	Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.
LA.RI.1.5	Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.
LA.RI.1.6	Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.
LA.RI.1.7	Use the illustrations and details in a text to describe its key ideas.
LA.RI.1.8	Identify the reasons an author gives to support points in a text and explain the application of this information with prompting as needed.

LA.RI.1.9	Identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).
MA.1.MD.C.4	Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
LA.SL.1.1	Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.
1-ESS1	Earth's Place in the Universe
1-ESS1-1	Use observations of the sun, moon, and stars to describe patterns that can be predicted.
LA.SL.1.2	Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
LA.SL.1.3	Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
LA.SL.1.4	Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.
LA.SL.1.5	Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.
1-ESS1-2	Make observations at different times of year to relate the amount of daylight to the time of year.

Essential Questions/Enduring Understandings

- What is air and what can air do?
- What is weather?
- How to describe the patterns of the sun, moon and stars through observation?
- How does the weather change over time?
- What is the relationship between the amount of daylight and the time of year?

Objectives

Students will know….

- Air is a gas which is a type of matter
- Air takes up space and is all around us
- How to describe the weather conditions
- How to describe weather changes over time
- The different types of clouds
- Why the moon looks different in the sky each night
- The amount of daylight per day changes through the year
- Weather changes with the seasons
- Weather and seasons affect our daily lives

- the effects of climate change on weather

Students will be skilled at…..

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Making observations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating and communicating information

Learning Plan

- Preview the essential questions and connect learning throughout the unit
- Maintain a KWL chart
- Gain students understanding and prior knowledge of air and weather
- Read literature about air and weather
- Read literature about seasons
- Read literature about the moon
- Utilize FOSS kit with materials: Air and Weather
- Introduce key vocabulary
    - Air Vocabulary: air, air resistance, compress, gas, matter, pressure
    - Weather Vocabulary: anemometer, cirrus cloud, cumulus cloud, degrees Celsius, degrees Fahrenheit, Earth, hibernate, meteorologist, migrate, moon, seasons, stratus clouds, sun, sunrise, sunset, temperature, thermometer, water vapor, weather, weather conditions, weather instrument
- Use vials, syringes, and tubing to explore air as matter and discover air takes up space and can be compressed to create pressure which can move objects
- Construct and compare parachutes and balloon rockets that interact/use air
- Take students on an outdoor walk to observe the weather and clouds
- Record daily weather and create a bar graph of types of weather
- Use a thermometer to measure and record temperature
- Create a chart to compare different types of clouds
- Monitor the times of sunrise and sunset and record the amount of daylight per day
- Look for evidence of moving air and describe wind speed by using pinwheels, an anemometer, and a wind scale
- Observe bubbles and construct wind vanes to find wind's direction
- Observe and record the moon's shape
- Identify and locate the position of objects in the sky relative to the Earth and each other
- Watch videos with a simulation of the Earth and how its daily rotation creates day/night, and its orbit

alters its position relative to the sun each season.
- Act out how objects in the sky move by assigning students the roles of sun, earth, and moon
- Analyze collected data to determine the patterns of the moon and annual patterns of daylight
- Maintain observational journals with student note-taking and drawings of experiments and activities
- Incorporate literature about air and weather through shared reading, big books, and nonfiction books from classroom libraries
- Observe/read literature about changes in animal behavior related to the seasons (Example: birds migrating or bears hibernating)

Assessment

Students will be assessed through a variety of methods. Teacher will use various types of assessments to gauge student understanding. Students will be required to have understanding and mastery of the following key concepts.

Formative Assessments: Teacher observation, student responses during lessons

Summative Assessments: Foss investigation checklists, science notebook (see focus questions below)

Benchmark Assessments: Investigation I-Checks (see focus questions below), science notebook (see focus questions below)

Alternative Assessments: Oral presentations or student-produced projects that further explore focus questions below.

- Investigation 1.1 FQ: What can air do?
- Investigation 1.2 FQ: How does a parachute interact with air?
- Investigation 1.3 FQ: What happens when air is pushed into a smaller space?
- Investigation 1.4 FQ: How can water be used to show that air takes up space?
- Investigation 1.5 FQ: How can compressed air be used to make a balloon rocket? (Optional)
- Investigation 2.1 FQ: What is the weather today?
- Investigation 2.2 Icheck and FQ: What time of day is the air the warmest?
- Investigation 2.3 FQ: What types of clouds are in the sky today?
- Investigation 2.4 FQ: What time of day can we observe the moon?
- Investigation 3.1 FQ: How can bubbles be used to observe the wind?
- Investigation 3.2 FQ: How strong is the wind today?
- Investigation 3.3 FQ: How can pinwheels be used to observe the wind?
- Investigation 3.4 FQ: What dos a wind vane tell us about the wind?
- Investigation 3.5 FQ: What weather conditions are good for kite flying? (Optional)
- Investigation 4.1 Icheck and FQ: How can we describe the weather over a month? What does the moon look like at different times during the month? (Optional)
- Investigation 4.2 FQ: How does the amount of daylight change over the year?
- Investigation 4.3 FQ: How does the temperature and weather change over the seasons?

Materials

Core Book List

FOSS Kit: Air and Weather

Different objects such as feathers, balloons, cotton balls, foam balls, paper clips so students can explore how air interacts with objects

BrainPop Junior

Discovery Education

Mystery Doug

Science notebook for assessment and journaling

Scholastic News or similar magazine if applicable

The Magic School Bus

- Season 1 Episode 13: Kicks Up A Storm (Weather)
- Season 4 Episode 4: Goes on Air (Air Pressure)

Available Shared Reading F&P Classroom:

- Rain, Sun, Wind, Snow: Poems About the Seasons (Fiction)
- Up, Up & Away (Hybrid)